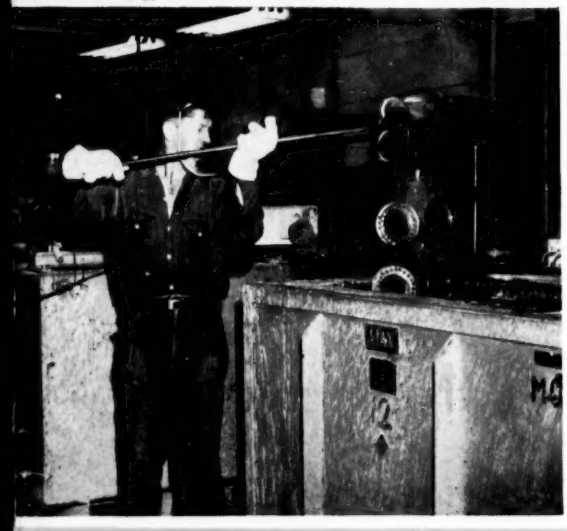
Chemical Week

December 11, 1954 Price 35 cents



Inland and ocean ports, materials aplenty heighten New Orleans' chemical attraction . . . . p. 34

Paradoxical key to fat sales: sell service primarily, sell products incidentally . . . . . p. 42

In-plant TV keeps an eye open where it's too dangerous, too inaccessible for men . . . . p. 58

Titania uses diversify, exports soar; they add up to a worldwide supply pinch . . . . . p. 89

Carburizing steel is old, but there's novelty in formulations, new convenienc

E P POWER
UNIVERSITY MICROFILMS IN
313 N 1ST ST
ANN ARBOR MICH

A McGRAW-HILL PUB

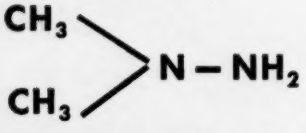
Another New Westvaco Chemical

Westvaco®

Unsymmetrical

DIMETHYL-HYDRAZINE

(Anhydrous)



NOW COMMERCIALLY AVAILABLE

This reactive disubstituted hydrazine warrants investigation for these potential uses

STABILIZER for organic peroxide fuel additives.

GAS ABSORBENT for acidic gases such as SO_2 and CO_2.

PHOTOGRAPHIC CHEMICAL to improve sensitivity and contrast.

INTERMEDIATE for the production of blowing agents, agricultural chemicals, dyes, synthetic fibers, pharmaceuticals, etc.

PROPERTIES

Dimethylhydrazine, a colorless, flammable liquid with an ammonia-like odor, is readily soluble in water, alcohol, ether and aliphatic hydrocarbons.

Boiling point, °F	146
Freezing point, °F	−72
Specific gravity, 77°F	0.782
Flash point (Tag closed), °F	34
Typical assay	98-99%

TECHNICAL DATA SHEET AND PRICE SCHEDULE ON REQUEST

fmc

REG. U.S. PAT. OFF

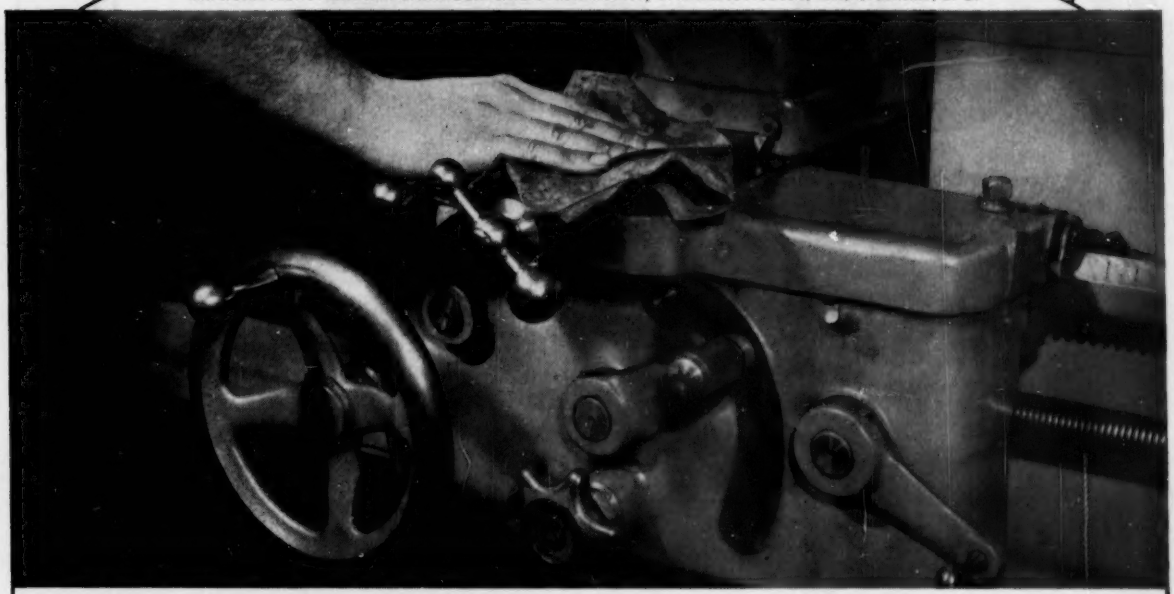
Please address inquiries to
MARKET DEVELOPMENT SECTION

WESTVACO CHLOR-ALKALI DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
161 East 42nd Street • New York 17

The Latex

that helps you clean up with non-woven fabric

FROM RAGS TO RICHNESS of a chamois-like cleaning cloth – that's what's in store for industrial wipers and housewives at low cost and a clean profit to the manufacturer through non-woven fabric made with CHEMIGUM LATEX. Photo courtesy of Lowndes Products, Inc., Greenville, S. C.



TOUGH, durable cleaning and wiping cloths that offer chamois-like qualities – super-softness, high absorbency and full washability – at a highly marketable cost, that's the latest, fast-growing use for non-woven fabric made with CHEMIGUM LATEX.

CHEMIGUM LATEX is an aqueous dispersion of a butadiene-acrylonitrile copolymer. It is used, along with modifying materials, in the bonding agent to impart permanent adhesion, flexibility and softness to the smooth, porous, multidirectional strength mat of random fibers.

Its use in non-woven fabric is just one of many for CHEMIGUM LATEX in the textile and/or paper and leather fields. Coatings, finishes, sizes, saturants, impregnants, inks and adhesives—all can be helped by its adhesion, strength, flexibility and resistance to oils, solvents, chemicals, water, wear and weather. How can it help your product? Samples and technical help are yours by writing to:

Goodyear, Chemical Division, Dept. X-9417,
Akron 16, Ohio

CHEMICAL
GOODYEAR
DIVISION

Chemigum, Pliobond, Pliolite, Plio-Tuf, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Use-Proved Products — CHEMIGUM • PLIOBOND • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS — The Finest Chemicals for Industry

5 Reasons Why
OUTSTATE MICHIGAN
fits industry like a Glove

- It's in the heart of the rich Midwest market
- Both labor and management have know-how
- Raw and semi-processed materials are abundant
- Transportation is excellent by rail, water or truck
- It has the greatest fresh water supply in the world

You'd need the fingers of two hands to count off Outstate Michigan's outstanding advantages. It has 400 friendly communities ranging in population from 200 to 200,000. It has unsurpassed educational and cultural opportunities. Its woods and waters and bracing climate make it the perfect place for work or play 12 months a year.

Mr. Manufacturer! Ask now for the facts about how Outstate Michigan fits your industry

It takes a specific location with proper facilities TO FIT YOUR NEEDS Write us YOUR REQUIREMENTS

FOR INFORMATION CONTACT INDUSTRIAL DEVELOPMENT DEPT. **CONSUMERS POWER COMPANY** JACKSON, MICHIGAN

Chemical Week—

Volume 75 **December 11, 1954** Number 24

OPINION	4	**PRODUCTION**	58
NEWSLETTER	9	**RESEARCH**	70
BUSINESS & INDUSTRY	13	**MARKETS**	85
DISTRIBUTION	42	**SPECIALTIES**	94

PUBLISHER ..... Wallace F. Traendly
EDITORIAL DIRECTOR ..... Sidney D. Kirkpatrick
EDITOR ..... W. Alec Jordan
MANAGING EDITOR ..... Howard C. E. Johnson
ASSOCIATE EDITOR ..... Donald P. Burke

DEPARTMENT EDITORS

Business & Industry: Jane H. Cutaia, Homer Starr, Joseph A. O'Connor • **Distribution:** Raymond H. Layer • **Markets:** Anthony J. Piombino • **Production:** Donald P. Burke, Michael L. Yaffee • **Research:** Ralph R. Schulz • **Specialties:** J. R. Warren • **Art and Editorial Make-up:** Donald R. Thayer • **Copy Editor:** William M. Mullinack

EDITORIAL ASSISTANTS

Robert C. Hosford • Charles Joslin • Joseph F. Kalina • Vincent L. Marsilia Richard Ringheim • Kay Sebiry • John M. Winton

NATIONAL NEWS

Atlanta, William Kearns • **Chicago,** Frank C. Byrnes • **Cleveland,** Robert E. Cochran **Detroit,** James C. Jones • **Houston,** James A. Lee • **San Francisco,** Elliot Schrier **Washington,** George B. Bryant, Jr. • **Finance & Statistics,** Douglas Greenwald, Robert P. Ulin • Correspondents in 55 principal cities

WORLD NEWS

J. K. Van Denburg (editor) • **London,** Edward W. S. Hull • **Paris,** John O. Coppock **Frankfurt,** Gerald Schroeder • **São Paulo,** Lionel Holmes • **Mexico City,** John Wilhelm **Tokyo,** Alpheus W. Jessup • **Manila,** Herbert Leopold • Correspondents in 44 capitals and principal cities

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), founder. **Publication Office: 1309 Noble St., Philadelphia 23, Pa.**

Executive Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions to Chemical Week are solicited in the chemical and process industries from management men in administration, research, production and distribution. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 1309 Noble St., Philadelphia 23, Pa., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Single copies 35¢. Subscription rates—United States and Possessions $5.00 a year; $8.00 for two years; $10.00 for three years. Canada $6.00 for a year; $10.00 for two years; $12.00 for three years. Other Western Hemisphere and the Philippines $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $25.00 a year; $40.00 for two years; $50.00 for three years. Entered as second class matter December 20, 1951 at the Post Office at Philadelphia 23, Pa., under the act of March 3, 1879. Printed in U.S.A.

Copyright 1954 by McGraw-Hill Publishing Co., Inc.—All rights reserved.

Power Stainless Products Co.

MOST

Complete Stock of

STAINLESS

Steel Products

When you deal with Power, you're always sure of getting any stainless item anytime—because Power carries the most complete stock anywhere.

PIPE

Stainless • Aluminum • Saran

Fabricated to your requirements

VALVES

Stainless • Aluminum • Nickel • Lead • Monel

Featuring Stainless Steel Screwed and Flanged Valves

FITTINGS

Stainless • Aluminum • Saran

Featuring the Quality Lines — Camco Stainless Steel Screwed, Flanged and Welding Fittings . . .

Triclover Zephyrweld Fittings

TUBING

Stainless • Aluminum • Saran

Featuring—Stainless Tubing in all gauges and sizes

Speedy Delivery Everywhere!

"Specialists in Corrosion Resistant Materials"

Phone Now!

N.J.—GRegory 3-2100

N.Y.—PEnnsylvania 6-1388

Phila.—GArfield 6-6448

POWER

STAINLESS PRODUCTS CO.

354 HARRISON ST. PASSAIC, N. J.

OPINION . . . . . .

Terseness' Epitome

TO THE EDITOR: America's United States' chemical industry's CHEMICAL WEEK's apostrophe use's phenomenal . . .

LINDENTHAL'S WALTER
New Jersey's Lakehurst

The editor's face's color's red.—ED.

Sharp-Eyed Canadians

TO THE EDITOR: On page 8, Nov. 20, you say: "We don't even segregate Canadian news as Foreign." On page 34, same issue under Foreign, there is Caustic/Chlorine/Canada . . .

I'll admit that much ground and time are covered in the intervening pages, but nothing was noticed to warrant the reclassification.

Did I miss something?

J. L. D. SHAW
Technical Dept.
Maitland Works
Dupont Co. of Canada Ltd.
Maitland, Ont.

TO THE EDITOR: . . . You say *(Nov. 20)* that CW considers U. S. and Canadian chemical industry as one, cite U.S.-Canadian sales and mergers . . .

Same issue, page 34, Foreign—Caustic/Chlorine/Canada.

Would somebody please introduce the editorial staff to Mr. Jordan?

E. P. CONROY
Montreal, Canada

After formal introductions all around, the gulf between recast policy and practice has been bridged.—ED.

Realism Defender

TO THE EDITOR: I have just read Mr. Irving Lapidus' critical letter *(Nov. 13)*. I come to your defense . . . I believe his criticism of your editorial on the farm—and agricultural chemical outlook *(Oct. 23)*—is entirely unwarranted.

Your editorial was not at all pessimistic in my view, but realistic and at the same time both hopeful and helpful. Every ascertainable fact at the present time indicates that farm income will certainly not rise and perhaps may drop some more yet. Naturally, I, as a person closely associated with the agricultural scene, would rather see the farmer's income rise, but the facts just don't indicate that. Why then should we fool ourselves and become "vulgar optimists"? Certainly the chemical industry should not fool itself or its stockholders or potential investors, either.

One state of affairs in the chemical industry that has caused me to wonder in the last two years is: the ever-increasing number of companies that have jumped on the nitrogen-fertilizer-manufacturing band wagon. Some of these newcomers had never been in the chemical business before.

With all this increased nitrogen-producing capacity about to come on-stream, competition certainly should be fierce and especially so in the face of a dwindling market. With this state of affairs evident, sales managers certainly would be well advised, as you say, to sharpen their selling.

Moreover, I believe some people should have their heads examined for lack of realistic thinking when the price of agricultural nitrogen was increased during this period. The law of supply and demand decrees that the price should be decreasing. . . .

RALPH J. HERVEY
Plant Pathologist
Texas Agricultural Experiment Station
Temple, Tex.

Hooked Decimals

TO THE EDITOR: The composition of a golf ball as reported in your "Impact" *(Nov. 27, p. 22)* is:

Balata rubber cover . . . 0.25% by weight. Center—silicone or rubber wound with rubber thread—0.75% by weight. Total reported, I gather—1.00% by weight.

Is the other 99% the "oomph" furnished by the man behind the club?

HERBERT S. SCHENKER
Supt. of Standards
Procurement Dept.
City of Philadelphia, Pa.

We suffered a typographical hook on our decimals. On the fairway it should be 25% and 75%. Sidelight: golf balls weigh 1.68 oz., are 1.68 in. in diameter.—ED.

Addenda and Credit

TO THE EDITOR: In our report on methanol (CW Report: What's in Store for Methanol, *Nov. 27*) your otherwise excellent printer listed dimethyl mercaptan as a consumer of methanol in the table on page 52. Actually, of course, it should have been dimethyl aniline. And the estimated consumption for 1954 should have read 0.3 million gal. instead of 0.5 million gal.

Also, in the interests of fairness, we would like to cite the source of the methanol antifreeze consumption chart on page 48. The figures up to 1947 we derived from the Chemical Economics Handbook issued by the Stanford Research Institute. The estimates and projections after that year are our own.

FRANK DOLIAN and
WALTER GWINNER
Commercial Solvents Corp.
New York, N.Y.

Chemical Ohio

TO THE EDITOR: I was interested in your news article "Upper Ohio Resurgence" and the data that you presented . . .

To determine whether or not the growth of the chemical industry in this area was reflected in our employment figures we have tabulated and analyzed our tax reports . . . of which I am enclosing a summary . . .

I thought that you might be interested in these facts we have developed . . .

WILLIAM PAPIER
Director
Division of Research and Statistics
Bureau of Unemployment Compensation
State of Ohio,
Columbus, O.

Thanks. Highlights of the analysis: "Growth of the Ohio chemical industry has been phenomenal in the years since World War II. Capital outlays, however, are particularly high in relation to direct employment. Nevertheless, employment gains have also been significant, particularly in several Ohio River and Lake Erie counties.

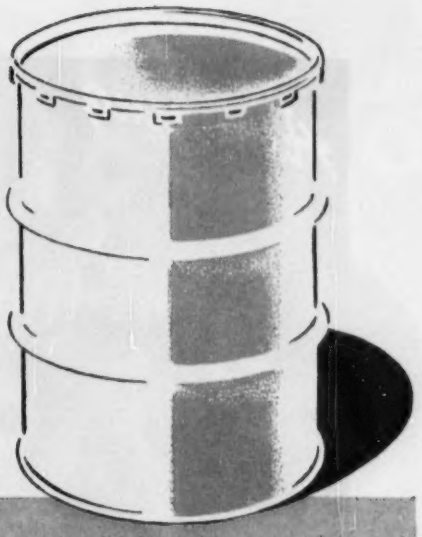
"As revealed by quarterly unemployment compensation tax reports manufacturers of chemicals employed an average of 44,778 workers in 1953. This represented an increase of 13% over 1947—approximately the same rate as that for all manufacturing in Ohio. Within the state, however, the pattern was widely divergent. Ten of Ohio's 88 counties have 800 or more workers engaged in the manufacture of chemicals and allied prod-

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

Harshaw

Sodium Methylate SPEC 101



Packaged in airtight steel drums of 25, 50 and 200 lbs. net

Free Flowing white hygroscopic powder

Sensitive to air and moisture

Packs 4.6 pounds per gallon

Formula $NaOCH_3$

Formula Weight 54.03

CHEMICAL ANALYSIS

Sodium Methylate Typical 97.5%	Methanol Free 0.5
Sodium Hydroxide 0.5	Soluble in Methyl Alcohol
Sodium Carbonate 1.2	Decomposed violently by water
Sodium Formate 0.3	

Standard 95.0% min.

also available

Sodium Methylate Liquid

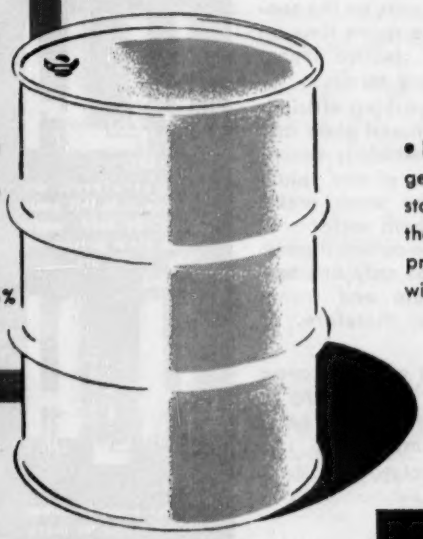
SPEC 102

Packaged in Steel Drums 425 pounds net

25% solution of sodium methylate in methanol

Analysis:

Sodium Methylate Content 24.5 to 25.5%



• Harshaw warehouses have been geographically located and amply stocked to fill your orders and ship them without delay. If you have a problem our technical service men will work with you toward its solution.

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio

Chicago 32, Illinois • Cincinnati 13, Ohio • Detroit 28, Michigan • Houston 11, Texas
Los Angeles 22, California • New York 17, N. Y. • Philadelphia 48, Pennsylvania
Pittsburgh 22, Pennsylvania

HARSHAW

THE EIMCO BURWELL

Plate and Frame Filter users will appreciate this new Eimco filter because it does EASILY so many of the jobs that were long tedious tasks on the conventional Plate and Frame Filter.

Take for instance the long job of opening and closing — now, with the Eimco, it's a matter of push-button control with instant response, takes no time at all.

Cleaning, which may take hours on the conventional machine, requires no down time on an Eimco, simply rotate the cleaned frame into position and start filtering again.

You get several times the washing efficiency with an Eimco over conventional plate and frame filters. The split cake which is evenly formed over the entire surface of each plate is washed by introducing the wash water through the feed port. Thus both surfaces of filter media are utilized for the outward passage of wash liquor, instead of only one surface as on conventional plate and frame filter. Washing efficiency is, therefore, at least doubled.

One hundred square feet of filter area on an Eimco Burwell filter is equal to 5, 10 or 20 times that amount of area on a conventional plate and frame filter.

Write for complete information.

Plates open to allow frame to enter and position for filtering.

Plates closed on frame — in this position the feed, wash and blow portion of the cycle are completed.

Plates open to allow filled frame to move down and out.

EIMCO

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. ✱ Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milan, Italy

OPINION . . . . . .

ucts. These ten counties account for seven out of every eight employees in the industry. The great variation in trends among these counties is illustrated by the data below:

County	Average Employment 1953	Per Cent Change From 1947
State of Ohio	44,778	+13.4
Ten-county total ...	39,316	+11.4
Lake Erie counties .	17,570	+12.7
Cuyahoga	10,688	+ 1.5
Lake	4,376	+25.0
Lorain	806	+67.2
Lucas	1,700	+58.0
Ohio River counties	15,087	+12.9
Hamilton	12,782	+ 5.0
Lawrence	1,353	+96.1
Washington	952	+87.0
"Inland" counties .	6,659	+ 4.9
Summit	3,172	+ 2.7
Franklin	2,075	+ 4.3
Montgomery	1,412	+11.3

"The relative increase in the Lake Erie counties, as a group, and the Ohio River counties, as a group, was the same—13% from 1947 to 1953. The "inland" counties, however, increased their employment in the industry only 5%.

"The two major centers of chemical-industry employment — Hamilton County (Cincinnati) averaging 12,782 workers in 1953, and Cuyahoga County (Cleveland) with 10,688—each reported relatively slight gains over 1947. On the other hand, percentage increases were greatest for four counties among these ten with relatively small absolute totals of employment in the industry.

"In the upper Ohio River valley, employment nearly doubled since 1947 in Lawrence County (Ironton), and jumped 87% in Washington County (Marietta). Along Lake Erie, however, Lorain County (Lorain) was up two-thirds, while Lucas County (Toledo) increased 58%.

"These data point up what has already been noted as the 'resurgence' of the upper Ohio River valley, in *Chemical Week* (Aug. 22, 1953)."—ED.

DATES AHEAD . . .

American Institute of Chemical Engineers, annual meeting, Statler hotel, New York, Dec. 12-15.

Chemical Market Research Assn., joint meeting with CCDA, subject: chemicals in foods and feeds, Edgewater Beach hotel, Chicago, Jan. 20-21.

Plant Maintenance and Engineering Show, International Amphitheatre, Chicago, Jan. 24-27.

BROMIDES
for chemical processing

Hydrobromic Acid

A NEW, MODERN PLANT with new exacting controls and increased capacity is now producing Hydrobromic Acid at Michigan Chemical Corporation. Greater demand for this product as a brominating agent and for the manufacture of other bromides made this expansion necessary.

Why use HBr? Because bromide intermediates, made with Hydrobromic Acid, often provide a higher yield of finished products and more economical production.

USES: Bromides, intermediates, dyes, drugs, perfumes, sedatives, photographic emulsions.

Michigan Chemical Corporation, for almost twenty years a quality producer of chemicals, offers a series of pure bromides, among them being Ethyl Bromide, Monobromobenzene, Cyclopentyl Bromide and Hydrobromic Acid, specially made for use in pharmaceutical manufacturing. Write for further information or catalog.

MC*

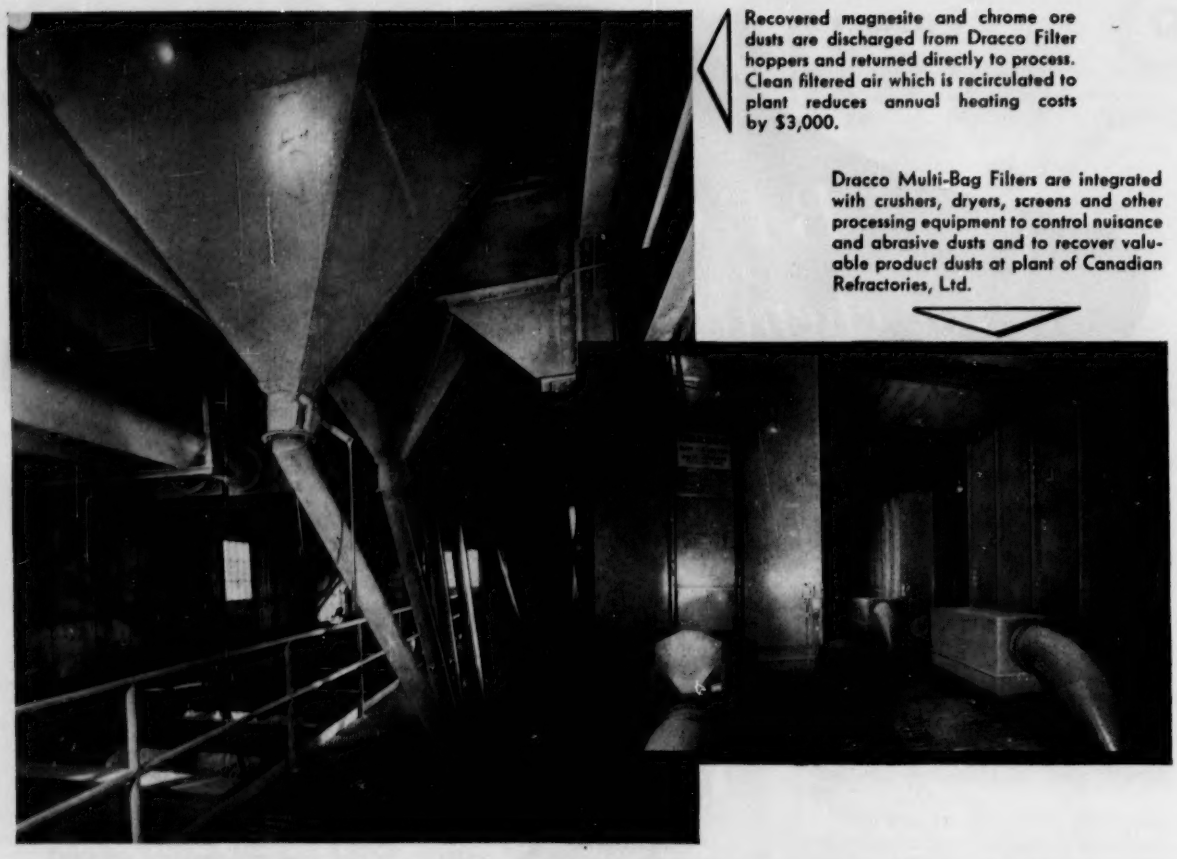
C 54-4

*Trademark

MICHIGAN CHEMICAL CORPORATION Saint Louis, Michigan

EASTERN SALES OFFICE: 230 Park Avenue New York 17, New York

BASIC MANUFACTURER OF INDUSTRIAL, PHARMACEUTICAL AND AGRICULTURAL CHEMICALS



Recovered magnesite and chrome ore dusts are discharged from Dracco Filter hoppers and returned directly to process. Clean filtered air which is recirculated to plant reduces annual heating costs by $3,000.

Dracco Multi-Bag Filters are integrated with crushers, dryers, screens and other processing equipment to control nuisance and abrasive dusts and to recover valuable product dusts at plant of Canadian Refractories, Ltd.

DRACCO PAYS *Annual Dividend* TO BRICK PLANT

Canadian Refractories Saves Over $40,000 Each Year Through Dracco Dust Control

Recovery of valuable product dusts and cost savings on plant heating—these are the bonus benefits Canadian Refractories, Ltd., is getting from the Dracco Dust Control System at its new Marelan (Quebec) plant.

To assure dust-free working conditions and to prevent wear of machinery by abrasive dusts, Canadian Refractories equipped this basic refractories plant with Dracco Dust Control Equipment when it was built.

Integration of five Dracco Multi-Bag Filters with crushers, dryers, screens and conveyors now provides efficient control of process dusts. But more than that, it makes possible savings on heating costs and the profitable recovery of valuable magnesite and chrome ore materials. In evaluating the bonus benefits of its Dracco System, Canadian's management estimates that it:

(1) recovers magnesite, chrome ore and other dusts at an approximate rate of 100 tons per month.

(2) makes possible annual savings of some $3,000 in plant heating costs through recirculation of heated, filtered air.

The estimated tangible savings from product recovery and lower heating costs add up to *more than $40,000 each year.*

If you have a dust control or dust recovery problem, look into the dividend "pay off" you can get from a Dracco Dust Control System.

DRACCO CORPORATION

4080 East 116th St. • Cleveland 5, Ohio

Dracco 40-page Bulletin 800 contains complete technical information on "Industrial Dust Control and Recovery". Write for your copy today.

DRACCO *Performance Proved*

Airstream **CONVEYORS · DUST CONTROL EQUIPMENT**

NEWSLETTER

"Plant first, people second." That's how O. A. (Jack) Knight, president of the Oil Workers International Union (CIO), characterized the philosophy of oil companies in a blistering statement published this week in the *Oil Worker*, the union's newspaper.

Provoking Knight's wrath is the fact that the union has been unable to get a 5% wage increase—a goal it announced last June. And thinly veiled in his 2000-word statement are threats of featherbedding and strikes (a no-strike pledge was canceled last month).

Higher wages, however, aren't Knight's only goal. He also wants companywide bargaining, a shorter work week, and an end to firms' contracting-out of work.

•

A $400-million industrial combine will shape up if Louis Wolfson gets his way. (Wolfson controls over a dozen corporations, is seeking to sew up Montgomery Ward.) He wants to merge Merritt-Chapman & Scott, New York Shipbuilding, Devoe & Raynolds and Tennessee Products and Chemical into an enterprise with gross assets of over $200 million and sales topping $400 million.

Directors of the four firms have approved the plan, which involves issuance of Merritt-Chapman & Scott common stock in exchange for the stock of the three other companies. Now it's up to SEC.

Wolfson says the plan is designed to "integrate skills, manpower, equipment and other resources," providing "increased opportunities for . . . growth as well as a large immediate potential."

•

A merger was approved last week as the American Plant Food Council voted to join the National Fertilizer Assn. in the newly named National Plant Food Institute, which comes into being next July 1. NFA approved in a vote last month (*CW, Nov. 20, p. 18*).

•

Two top-level government committees will ponder air pollution problems, may issue legislative recommendations. One group will discuss technical problems; the other, policy. And on both are representatives from Atomic Energy Commission, National Science Foundation, and Depts. of Agriculture, Commerce, Defense, Interior, and Health-Education-Welfare.

•

It looks now as if the chemical industry will have to prepare its defenses against a new onslaught on protective tariffs. In a press conference at New York's Waldorf-Astoria late last week, Clarence Randall, adviser to the President on tariffs, predicted that the new Congress will—contrary to expectations of most Washington observers—accept the plan to authorize the President to cut tariffs by a maximum 5% a year over a three-year period.

The U. S. chemical industry, Randall contended, is fully able to "walk" without the aid of a tariff crutch.

Randall spelled out three goals for his program: higher production through more trade, lower prices in a free market, greater international security through healthier foreign economies.

Don't be suprised if Imperial Chemical Industries enters the U. S. titanium arena. It has done considerable process research, now has a mission in this country studying the possibility of hooking up with a competent U. S. partner.

•

Senators from Southern tung-producing states aren't satisfied with Argentina's "voluntary" restrictions on the amount of tung oil it will ship to the U. S.; they demand instead that the President impose definite quotas on foreign material.

Senator Holland (D., Fla.) suggests that domestic producers be allowed to market their oil in early winter; then, if demand still exists, Argentina (and Paraguay, a much smaller producer) could ship oil here in early summer.

•

Dept. of Agriculture scientists have unearthed a spate of new insect-repellent chemicals in research sponsored by the Dept. of Defense. One, they think, is especially promising: N,N-diethyl-*m*-toluamide. It's equal to currently used chemicals against ordinary mosquitoes, better against yellow fever and other deadly species.

•

Lysine, one of the eight amino acids essential to human health, is now being made synthetically by Du Pont. Production is semicommercial, from a pilot plant at Niagara Falls, N. Y. Tradenamed Darvyl, the amino acid will be sold to bakers for fortification of breads and cereal foods.

•

Also synthesized—but not on a commercial scale—is natural rubber. Goodrich-Gulf researchers accomplished the feat and patent applications have been filed.

The synthetic material can't compete costwise with GR-S synthetic or plantation-grown natural rubber but the synthesis does place a ceiling on the price that plantation operators can charge; and it could provide U. S. self-sufficiency in wartime of items—truck and airplane tires, for example—in which natural rubber is superior.

•

Personal toiletry products took the lion's share of honors in the Chemical Specialties Manufacturers' Assn.'s third annual aerosol packaging contest (*CW Newsletter, Dec. 4*).

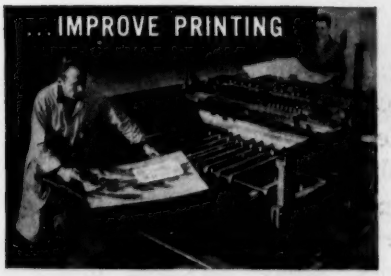
Top award went to Lilly Dache Invisible Net hair spray. Other winners: Fly Tox insect bomb, Mist air deodorant, Yardley shaving foam, Sardi hand cream, Safe-T-Strip paint remover, GlasSpray glass cleaner, Gun Guard gun and reel oil, Xmas Snow artificial snow and Parfum Corday perfume.

•

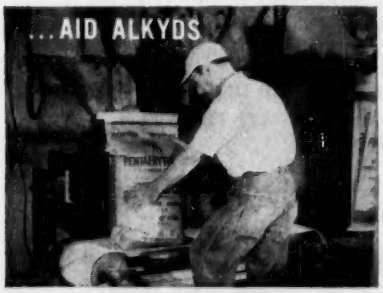
A laboratory explosion and fire in which 10 Philadelphia firemen lost their lives last October has triggered proposals of restrictive legislation. Now being drafted are city laws requiring identification and filing of records of dangerous materials. The law, entailing a system of color identification and a central filing system, would enable firemen arriving at a fire to get, via radio, an inventory of dangerous materials stored in the building. Moreover, the proposed legislation would require any plant handling dangerous chemicals to employ a qualified full-time chemist graduated from a recognized college.

. . . The Editors

HOW HERCULES HELPS...



▲ **QUALITY UP, PRODUCTION UP**—In ornamental printing using the silk screen process, Hercules EHEC, a new modified ethyl cellulose film-former, gets the job done faster. Inks made with EHEC, ideally suited for quality rotogravure as well as silk screen printing, make use of lower cost solvent combinations, dry faster, and have less objectionable odors.



▲ **"SQC FOR PE"**—Used in alkyd resins, Hercules PE (Pentaerythritol) gives surface coatings higher gloss, better wearing and drying characteristics—often at lower manufacturing cost. To maintain PE quality, Hercules operates under a strict Statistical Quality Control program that insures consistent specifications from batch to batch.

HERCULES

▲ **FROM "SNOW" TO TOYS**—Aerosol dispensed "snow" based on Hercules® ethyl cellulose; gaily decorated wrapping paper utilizing one or more of a whole family of Hercules' paper making chemicals; toys molded with durable Hercules Hercocel® plastic—everywhere you look you'll find products made with the help of basic chemical materials supplied by Hercules.

Most businesses are helped today by Hercules' business . . . the production of synthetic resins, cellulose products, chemical cotton, terpene chemicals, rosin and rosin derivatives, chlorinated products, and many other chemical processing materials—as well as explosives. Through close cooperative research with its customers, Hercules has helped improve the processing or performance of many industrial and consumer products. We welcome the opportunity to work with you.

HERCULES POWDER COMPANY

INCORPORATED

992 Market St., Wilmington 99, Del.

Sales Offices in Principal Cities

954-12

*Another Product Safely Shipped in Inland "protection-eered" Containers**

INLAND prescribes for an ulcer cure

The Packaging Engineer at Reheis Company, Inc., Berkeley Heights, New Jersey, producers of special aluminum compounds used in anti-acid ulcer medications, was about to become his own best customer!

Since the company was first organized, he had been searching in vain for a container manufacturer who could provide a lined steel drum that would hold his company's product, successfully. The wooden barrels they were using were entirely unsatisfactory. Contamination was common, handling costs excessive and damage losses high.

Then Inland Steel Container Company prescribed a special lining that is highly resistant to many chemicals. It proved to be the perfect answer to the Reheis packaging problem. Today, their aluminum compounds are being shipped in volume to the pharmaceutical and cosmetic industries, safely packaged in "protection-eered" steel drums.

If you are having difficulty finding the right container for your products, why not try Inland Steel Container. Their packaging chemists will be most happy to discuss your shipping container problems with you.

IT'S BETTER TO SHIP IN STEEL

**The right container with the right lining for your product*

Chemical Division, Dept. B

INLAND STEEL CONTAINER COMPANY

Division of Inland Steel Company

6532 South Menard Avenue • Chicago 38, Illinois

Plants: Chicago • Jersey City • New Orleans

INLAND

BUSINESS & INDUSTRY. . . .

DEFENSE COUNSEL HARLAN, JUDGE LA BUY, U.S. ATTORNEY HOTCHKISS: After five years, a finding of . . .

No Conspiracy, No Restraint

Du Pont's size and ownership, its holding of about 22.7% of General Motors common stock, and its past and present dealings with GM and U.S. Rubber Co.—all have passed the test of legality in Federal Judge Walter La Buy's courtroom at Chicago.

Late last week, before some 300 lawyers, reporters, company officials and a few curious Chicagoans, Judge La Buy stepped up to the bench and—in quiet, matter-of-fact tones—read excerpts from his 220-page opinion on why the government's 1949 antitrust civil suit should be dismissed.

"The government," declared the veteran 65-year-old jurist, "has failed to prove conspiracy, monopolization, a restraint of trade, or any reasonable probability of a restraint."

Based on Data: La Buy did not delve into legalistic reasoning in framing his opinion; he indicated that he found the factual evidence—which included 8283 pages of transcripts of testimony and 2506 documentary exhibits—sufficient in itself to form the basis for the dismissal.

Not surprisingly, Du Pont management was cheerful after the decision came out; the Dept. of Justice had no immediate comment. Earl Jinkinson, in charge of the Antitrust Division's Chicago office, told reporters that he'll be ready within a week to submit suggestions to the Solicitor General (who decides whether the government will appeal a case to the U.S. Supreme Court); but the feeling among court observers was that La Buy's decision was so sweeping as to discourage an appeal.

Thus the odds are that this decision will stand, permitting Du Pont to hold on to its 20 million shares of GM common stock—which accounted for 31% of Du Pont's 1953 earnings, 33% of 1952 earnings.

Commented Du Pont President Crawford Greenewalt: "We are naturally gratified at the decision in this case. We were confident that this would be the result, and are grateful to our many friends who expressed similar confidence during the course of the long proceedings."

Family Included: The government's complaint—drawn up and filed while the Justice Dept. was headed by Texas' Tom Clark, now associate justice of the Supreme Court — had charged that Du Pont's acquisition of GM stock and the purchase of U.S. Rubber stock by individual members of the Du Pont families were for the purpose of staking out a vast "protected market" for Du Pont and U.S. Rubber products. More than 100 individuals were originally named as defendants, along with Christiana Securities, Delaware Realty & Investment, and the three manufacturing concerns. Willis Hotchkiss, former law lecturer at Yale, argued the government's case.

All defendants vigorously denied the charges. Their 34-lawyer defense team—headed by John Harlan, who recently was nominated by President Eisenhower for appointment to the Supreme Court—presented evidence that the companies were free to buy from each other or from any other producers; and Judge La Buy found this true.

"All the evidence," La Buy wrote, "supports a finding that (GM) bought or refused to buy solely in accordance with the dictates of its own purchasing judgment. The record shows consultation and conference, but not domination."

The judge also cleared all parties of alleged wrongdoing in connection with chemical products researched by GM, made by Du Pont—tetraethyl lead, Freon, and synthetic rubbers.

Significance to the Industry: Du Pont—largest company in the industry—comes out of this suit freed of the flickering uncertainty about legality that has haunted the firm since the suit was filed.

Here's the Reasoning that Will Lie Behind Washington's Stand on Japan's Entry into Free World Trade

- Japan is our major ally in the Pacific.
- Japan is living on U.S. military spending—now tapering off.
- In the long run Japan must expand exports or (1) resort to dumping, (2) to military conquest, or (3) to an economic alliance with Red China.
- Japanese producers may get some relief from U.S.-sponsored South Asian and Korean Development programs—but it won't be enough.

All Set for a Tussle

The U.S. government will take the first step next week in its effort to open free-world markets to the Japanese. Kickoff will come at public hearings on a long list of products on which tariffs may be reduced during multilateral negotiations due to start next February.

Besides concessions—tariff cuts—to be given to the Japanese, the U.S. is also proposing to lower U.S. tariffs on imports from third countries if that third country will also grant tariff concessions to Japan. This could mean, for instance, that the U.S. might propose lower rates on chemical imports into the U.S. from Germany if the Germans would give the Japanese a break on cotton textile imports into Germany from Japan.

Battle Looms: With such a setup, there's no doubt that Japanese tariff negotiations will be one of the hottest battles in the whole trade policy controversy. The U.S. has never held any tariff negotiations with the Japanese, never has had trade agreements with them. Result is that the President's power to reduce duties on Japanese products is still substantially intact.

That Eisenhower expects to make use of that power is patently evident by the list of products on which the government proposes to consider cutting tariffs. Over-all, these products comprise 55.2% by value of Japan's exports to the U.S.—or $143 million worth of a total of $260 million exported to the U.S. in 1953. In other words, these are products in which Japan does a substantial business here and which compete importantly in the domestic market.

As things stand now a long list of U.S. industries—including sectors of the chemical industry—are therefore scheduled to protest vigorously against tariff concessions to the Japanese at the public hearings opening in Washington Dec. 13. Adding fuel to the fire: the proposal to grant tariff concessions to Japan is sure to meet emotional resistance based on memories of Japan's sharp prewar trading practices.

Line of Attack: Hottest words are apt to be fired over proposed tariff cuts in sodium glutamate preparations—top chemical import from Japan last year. But the chemical industry's real concern will be centered not on import of sodium glutamate directly, but upon a long list of coal-tar derivatives (listed under Sect. 1 and 5, paragraph 27 A of the Tariff Act of 1930) on which it is proposed to make concessions to other countries in exchange for their leniency with Japan. Total U.S. imports of affected products last year topped $2 million; and there's every possibility that one of the major countries to benefit from such a deal would be Germany—traditional rival of the U.S. chemical industry in world markets.

One compensating factor, however, from the point of view of the U.S. synthetic organic chemical industry, is the fact that the Administration has already used up most of its tariff-cutting authority in this field. Tariffs on synthetic organics have already been reduced from 7¢/lb. plus 40% ad valorem to 3½¢/lb. plus 25% ad valorem. The lowest level to which they can be cut under existing authority would be 3½¢/lb. plus 20% ad valorem—or another 5% ad valorem cut.

And that, from the companies' point of view, is indeed fortunate. For although their opinions will be weighed carefully before the government makes its final decision on what concessions it will offer next February, it's generally accepted that they won't (and can't) sway the basic determination of the Eisenhower Administration to swing open the door of free-world trade to Japan.

Major U. S. Imports From Japan 1953

BROUGHT IN WITHOUT DUTY

	Amount*	Dollar Value
Creosote Oil	1,412,199 gal.	263,934
Quinine Sulfate	344,398 avdp. oz.	108,982
Ammonium Sulfate (Fert.)	27,729 s. t.	1,216,720
Urea	9,406 s. t.	1,083,792
Camphor Oil, Natural	149,850	29,850
DUTIABLE, UP FOR NEGOTIATION		
Menthol, Synthetic	1,500	9,134
Camphor, Nat., Ref.	21,600	12,888
Coal Tar Dyes	3,000	8,589
Monosodium Glutamate Preps.	474,540	699,549
DUTIABLE, NOT LISTED FOR NEGOTIATION		
Naphthalene, 79 deg.	551,100	15,155
Phthalic Anhydride	862,964	161,004

*Amounts shown are pounds, unless otherwise specified.

Trying All Three

Apparently determined to have a bet on the "winning horse," the U.S. government this week is about to try a hedging maneuver that would put backing behind each one of the three leading processes of recovering nickel from lateritic iron ores.

Bethlehem Steel Co. and the General Services Administration have renewed negotiations on a contract under which the government would grant Bethlehem several million dollars to build a semicommercial pilot plant at Felton, Cuba, to test the firm's nitric acid process. No purchase commitment would be involved. Bethlehem—which says it has already proved the nitric acid process on a pilot-plant scale—has considerable mine holdings in Cuba's Oriente province.

After confidential evaluation of the three best-known nickel processes, Battelle Memorial Institute urged GSA to continue development of ammonia leaching at the government-owned Nicaro plant, and to sponsor pilot-plant tests on sulfuric acid and nitric acid leaching by private firms. GSA recently agreed to grant $6 million to Freeport Sulphur Co. for semicommercial pilot operations using sulfuric acid.

Enforcement Flurry

In a new flurry of enforcement moves, the Federal Trade Commission last week fired a fresh barrage of orders and complaints—and three of these actions were directed at chemical specialty makers.

On top of these steps in individual cases, FTC sounded a general warning. General Counsel Earle Kintner told Washington lawyers that "many flagrant violations" of FTC orders have been discovered, declared that the agency will ask the federal courts to rap companies that have persisted in prohibited trade practices.

In specific cases, FTC:

- Refused to permit Revlon Products Corp. to reargue its case in which FTC has ordered the company to stop using exclusive dealing contracts with its beauty supply jobbers (*CW, Oct. 23, p. 30*). Revlon wanted to use the success story of Hazel Bishop, Inc., to show that rival cosmetic manufacturers haven't been kept out of the market. Commissioner John Gwynne—writing the opinion denying Revlon's request—said the fact remains that smaller companies were kept out of the beauty supply jobber market.
- Got the Loamium Co. of America to agree to stop advertising that its "Kem-Kut" will make grass greener, make lawn mowing unnecessary.
- Issued a complaint accusing Knomark Mfg. Co.—maker of "Esquire" shoe polish—of making discriminatory promotional allowances and suppressing competition.

Another Door Opened?

A new French-U.S.S.R. bilateral trade agreement, covering the 18-month period from July '54 through Dec. '55 has been signed in Paris. Terms of the accord call for French imports from the Soviet Union totaling 29 billion francs ($81 million) and French exports valued at 25 billion francs (or $70 million).

While the French are offering some capital items, the new trade agreement conforms to recent Soviet tendencies to procure abroad large amounts of consumer goods—including synthetic fibers and yarns, essential oils, and specialty chemicals.

In return, France will receive large quantities of raw material from the Soviet Union. Included: 600,000 tons of anthracite, 140,000 tons of pitch, 90,000 tons of manganese ore, 15,000 tons of chrome ore, 25,000 tons of wood pulp, 1500 tons of toluol, and 500 tons of crude glycerine.

Bilateral trade agreements of this type don't always assure that the stated volume of trade will actually take place. And French business circles are frankly skeptical about making most chemical purchases unless directive powers of the French government are employed to force the imports.

U.S. chemical makers, however, are somewhat disturbed over the newly signed pact, see in it the foreshadowing of more extensive pacts to come.

Off Again, On Again

Changing signals for the second time within two weeks, the Agriculture Dept. last week boosted by 50,000 tons the amount of sugar that can be imported into the U.S.

The increase raises the 1954 sugar quota from 8.2 million (*CW, Nov. 20, p. 22*) to 8.25 million short tons, raw value. Most of the increase will go into the Cuban import quota.

Agriculture spokesmen had initially made the boost Nov. 15. But immediately thereafter, the spot sugar market dropped sharply, and the department was forced to rescind its order.

Now, however, it maintains that most of the sugar being traded is consigned for entry into the U.S. after Jan. 1. Hence, the sugar market won't be staggered by the increased quotas.

MAYTAG: Warns hour is late for effecting tax cuts.

Too Good to Be True

Putting forward a program that would gear cuts in federal levies to the growth of U.S. economy, Fred Maytag II, chairman of the National Assn. of Manufacturers special tax committee struck a theme close to the hearts of chemical executives last week. Speaking at the association's 59th annual Congress of American Industry in New York's Waldorf-Astoria, Maytag predicted that adoption of the plan would shave $8.4 billion/year from the tax bills paid by businesses and individuals in the middle and upper tax brackets.

Too, the cut could be effected without curtailing the $60 billion/year the government now collects in tax revenues.

Briefly the plan works something like this: five annual cuts of 16% each in the progressive element of each rate bracket—with each cut computed on the original element rather than on the declining balance—would be made to bring the top rate down to 35% at the end of the period. All income tax payers would receive the same percentage cut in their tax burden.

Corporations would benefit this way: the plan would cut 17 percentage points from the present combined corporate rate of 52%. First cut would be through "insistence on the reduction of five percentage points in the normal tax that's scheduled in April '55," then in the succeeding four years there would be a further reduction of three percentage points.

Chief selling point from the government's standpoint: NAM's plan "would achieve much, at little cost."

At the end of the contemplated five-year period, annual revenue loss would amount to only $4.7 billion in corporate taxes, $3-3.75 billion in individual taxes. And that loss would be more than offset by increased yields resulting from the expected growth in the nation's economy.

Basic to any consideration of the proposal, of course, is the assumption that it will be possible for the government to keep within an annual budget of $60 billion. But that, according to NAM tax committee members, should be well within the realm of reason—at least as far as current expenditures are concerned.

EXPANSION. . . .

Cement: Universal Atlas Cement Co.—a wholly owned subsidiary of U.S. Steel Corp.—will build a 3-million-bbl./year cement plant at Gary, Ind. The new units will give Universal a total capacity of more than 10 million bbls./year of cement.

•

Pulp: The Georgia Pacific Plywood Co. is willing to make a $50-million investment in construction of a newsprint mill near Juneau, Alaska. The firm is completing preliminary plans to qualify under Forest Service terms as a proper bidder for purchase of logs in the Juneau pulp timber allotment.

•

Sulfur: Shell Oil Co. is building a small pilot plant in the Okotoks sulfurous gas fields near Calgary that may be the forerunner of a full-scale sulfur extraction plant. Purpose, officials say, is to determine the applicability of a new method of scrubbing sour gas.

•

Sorbic Acid: Carbide and Carbon Chemicals Co. is building a new sorbic acid unit at South Charleston, W. Va. Work's scheduled for completion in the spring of next year.

COMPANIES. . . .

Brown Co. stockholders have voted to sell New Hampshire Paper Co.'s Canadian holdings for an estimated $46 million. Votes representing 653,000 of the firm's 2 million shares of common stock have been cast in favor of the proposal.

•

Climax Molybdenum Co. is stepping up its multimillion-dollar uranium exploration and development program, company officials say. First move: formation of an Exploration and Development Dept., with headquarters in Denver, Colo.

A forestry project that will include a $65-million pulp mill at Kitimat has been granted conditional approval by the British Columbia government. The pulp mill will be built at Minette Bay (about 5 miles from Kitimat) at a cost of $25 million; a paper mill will be put up sometime later, should cost around $40 million. Kitimat Pulp and Paper Co. is jointly owned by Aluminum Co. of Canada and Powell River Co.

•

Delta Chemical and Fertilizer Co. has been incorporated in Greenville, Miss., with capital of $100,000. Present facilities include insecticide and fertilizer units.

•

Food Machinery & Chemical Corp. has revealed that its subsidiary, Buffalo Electro-Chemical Co., Inc. will be merged with the parent company as of Jan. 1, '55, and will, thereafter, be operated as the Becco Chemical Division. Buffalo Electro-Chemical, a leading producer of hydrogen peroxide and other active oxygen compounds, was acquired by FMC in 1951 to complement the corporation's operations in diversified industrial chemicals.

•

Continental Sulphur & Phosphate Corp. (Dallas) has contracted to buy 50% of American Sulphur & Refining Co.'s Sulphurdale, Utah, plant, expected to be in production sometime next January. Initial capacity (says Continental): 100 tons/day of sulfur. Continental will hold exclusive rights to the plant's process, is said to be continuing negotiations to secure all rights to American's plant.

•

Uranium ore assaying up to $1850/ton has been discovered on municipal property owned by the Denver Water Board, 25 miles southwest of the city in the South Platte River canyon near Waterton. Immediate plans will be made for commercial exploitation.

Sobering Statistics

HARKING BACK once again to the manpower shortage theme, William Foster, president of the Manufacturing Chemists' Assn., warned members of the Drug, Chemical, and Allied Trade Section of the New York Board of Trade at a luncheon meeting at the Waldorf Astoria last week that today's demands are only a suggestion of the pinch that's coming. Need for chemical graduates, he notes, was one-third greater in 1953 than in the previous year; yet supply fell more than 20%. Moreover, less than half of the high schools in the U.S. offer adequate college preparatory courses today. Unless chemical companies take heed—and soon—the dire results are inevitable.

wherever corrosives flow...

try NEW DUR-ACE PIPE

a tough, corrosion-resistant plastic with a good cost factor

Dur-Ace is a new corrosion-resistant, rigid plastic pipe with exceptional impact strength and toughness . . . good for handling most corrosive fluids in your plant at moderate temperatures and pressures . . . with low first cost and long life.

Light in weight, Dur-Ace is odorless, tasteless, and non-contaminating. It maintains good strength, rigidity and chemical resistance from minus 40 deg. F. to 170 deg. F. As shown below, it handles all types of chemicals except a few strong acids and organic solvents. Dur-Ace is corrosion-resistant on the *outside* too, and saves the cost of painting. Electrolytic corrosion and bacteria have no effect on Dur-Ace, so it's excellent for underground lines handling water, brine, petroleum, natural gas, etc.

Successful field installations of thousands of Dur-Ace molded fittings have been made. We have job-proved performance data covering a wide variety of corrosives. Dur-Ace is available in pipe sizes from ½" to 2", Standard and Extra Heavy, with a wide variety of fittings.

***Dur-Ace** is the eighth basic type of corrosion-resistant pipe available from ACE . . . including materials for high pressures, high temperatures, strong acids, organic solvents, etc., and pipe sizes to 24" and above. Consult ACE first with any corrosion problem.*

CHEMICAL RESISTANCE AT 77 DEG. F.

SATISFACTORY		LIMITED	UNSUITABLE
Acetic Acid 10%	Ferric Sulphate	Formic Acid 20%	Acids stronger than listed at left
Hydrochloric Acid 30%	Salts of Calcium, Sodium, Potassium, Ammonium, etc.	Hydrofluoric Acid 10%	Aromatic Hydrocarbons
Sulphuric Acid 50%	Bleaches	Nitric Acid 10%	Chlorinated Solvents
Ammonium Hydroxide 28%	Most Plating Sols.	Phosphoric Acid 50%	Esters
Calcium Hydroxide	Oil (SAE 10-30)	Alcohols	Ketones
Sodium Hydroxide 20%		Vegetable Oils	

WRITE FOR BULLETIN 80A TODAY.

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

This advertisement first appeared April 1954

In our continuing study of isobutyraldehyde as a basic chemical raw material, we are pleased to announce the publication of

The Chemistry of Isobutyraldehyde and its Derivatives

by HAGEMEYER AND DECROES.

For your convenience in evaluating this new treatise as a reference manual in your daily work, we have reproduced here the table of contents.

TABLE OF CONTENTS

INTRODUCTION

SYNTHESIS
- Manufacture by the Oxo Process
- Manufacture from Isobutyl Alcohol
- Other Methods of Synthesis

PHYSICAL PROPERTIES
- Isobutyraldehyde
- Isobutyl Alcohol
- Isobutyric Acid

CHEMICAL PROPERTIES
- Acetal and Mercaptal Formation
- Acetylation
- Aldol Condensations
  - Isobutyraldol and Derivatives
    - Preparation
    - Oxidation
    - Reduction
  - Mixed Aldols and Derivatives
  - Hydroxypivalaldehyde and Derivatives
    - Preparation
    - Oxidation
    - Reduction
    - Reductive Amination
    - Acetylation
- Condensations Other Than Aldol
  - Acetoacetic Ester Reactions
  - Acyloin Formation
  - Azlactone Formation
  - Cannizzaro Reaction
  - Condensations With Miscellaneous Reagents
    - Acetylene
    - Chloroform
    - Ethyl Dichloroacetate

CHEMICAL PROPERTIES (Cont.)
- Ethylenimine
- Formamide
- 2-Methylquinoline
- Nitroparaffins
- Schiff's Bases
- Secondary Amines
- Condensations with Unsaturated Compounds
  - Ketene
  - Olefins
  - Unsaturated Ethers
  - Cyanoethylation
  - Ibanitrile Formation
  - Ibanitrile Reactions
  - Cyanohydrin Formation
  - Knoevenagel Reaction
  - Mannich Reaction
  - Michael Addition
  - Perkin Reaction
  - Reformatsky Reaction
  - Stobbe Reaction
  - Telomerization
  - Tischenko Reaction
- Dehydrogenation
- Friedel-Crafts Reaction
- Halogenation
- Nitrile Formation
- Organophosphorus Compound Formation
- Oxidation
- Pyrolysis
- Reduction
- Reductive Amination
- Sulfonation
- Trimerization

APPLICATIONS
- Amino Acids
  - Pantothenic Acid
  - dl-Valine
  - dl-Leucine
  - α-Aminoisobutyric Acid
  - Aminopivalic Acid
- Cellulose Esters
- Corrosion Inhibitors
- Gasoline Additives
- Hydraulic Fluids and Lubricants
- Insect-Controlling and Similar Agents
- Perfumes and Flavors
- Plasticizers
  - Isobutyl Alcohol
  - Dimethylmalonic Acid
  - 2,2,4-Trimethyl-1,3-pentanediol
  - 2,2,Dimethyl-1,3-propanediol
  - α,α-Dimethylglutaric Acid
  - Isobutyric Acid
  - Miscellaneous
- Polyamide and Polyester Intermediates
- Resins
- Solutizers
- Solvents
- Sulfonyldicarboxylic Acids
  - Synthesis
  - Polyesters
- Textile Assistants
- Vinyl Monomers

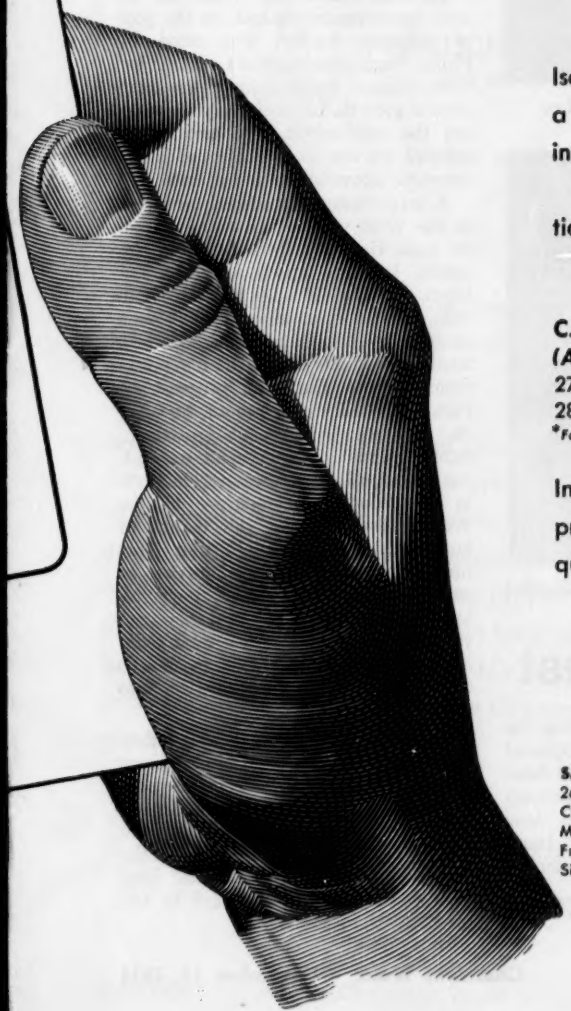
HANDLING PRECAUTIONS
- Fire Hazards
- Storage and Transfer

BIBLIOGRAPHY

This publication has been prepared to stimulate the thinking of industrial research and development personnel concerning isobutyraldehyde and its derivatives. We will be pleased to honor letterhead requests for copies.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
Subsidiary of EASTMAN KODAK COMPANY

. . increased use of isobutyraldehyde now permits sharp price reductions



Isobutyraldehyde is a versatile chemical whose usefulness as a raw material or intermediate makes possible many interesting processing shortcuts.

In line with economies resulting from larger scale production, Eastman has slashed prices almost in half.

NEW PRICE SCHEDULE

C. P. Grade* (Anhydrous)	Technical Grade**
27.5¢ per lb. in C.L. drums	19.5¢ per lb. in tank cars
28.5¢ per lb. in L.C.L. drums	21.5¢ per lb. in C.L. drums
	22.5¢ per lb. in L.C.L. drums

*Formerly 50¢ per lb. **Available for first time.

Investigate Eastman isobutyraldehyde as a new low-cost processing tool in your operations. Specifications and sample quantities are available upon request.

Eastman

CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
subsidiary of Eastman Kodak Company

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—412 Main St.; St. Louis—Continental Bldg. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.

BANKER BIMSON, RESEARCHER HOBSON, ENGINEER FOGG: You need . . .

. . . money, research, engineering—as development specialists* agree—to build up . . .

. . . industry that means new markets sought by chemical firms' Western officials.†

Feathering a Western Nest

For chemical companies with a Western exposure, any industrialization progress in those roomy states is thrice welcome because of its salubrious effect on chemical markets.

Accordingly, it comes as no surprise that of the 296 persons attending the recent Western Area Development Conference in San Francisco, 49 delegates were from chemical process companies. What they heard was generally encouraging: there's a trend toward increasing industrialization to process Western resources close to the mines and forests they come from; a second major industrial trend in the West has been the growth of market-oriented industry as a supplement to resource-oriented industry; and there's a desire on the part of Western industrial managements to feather their own 11-state nest by cooperating to bring in still more business-making industries.

Among process firms represented at the fast-paced, all-day program at the Hotel Mark Hopkins: Olin Mathieson Chemical, Cutter Laboratories, Shell Chemical, American Cyanamid, Oronite Chemical, Dow, Stauffer Chemical, Union Carbide and Carbon, Commercial Solvents, Consolidated Mining & Smelting, Great Lakes Carbon, Fibreboard Products, Crown Zellerbach, Ideal Cement, Permanente Cement, and Gladding, McBean & Co. In this group, there were more vice-presidents, research directors, Western managers and upper level engineers than out-and-out market development people.

Joint Action Urged: Need for an area development outlook on the part of industry leaders was cited by Philip Fogg, president of Los Angeles' Consolidated Engineering Corp. Successful growth, he declared in keynoting the conference, will most often depend on the joint action of many interests—government and private.

A brightening of business prospects in the West was described by Director Jesse Hobson, whose Stanford Research Institute sponsored the conference. "The West," Hobson said, "has, on an increasing scale, been processing its own raw materials into finished products, rather than sending them to the East for processing." Paralleling this development, he went on, has been the recent growth of industries set up to serve the expanding industrial and consumer markets in the West. One measure of the West's advances into the realms of industrialization: the fact that "fortunately, the eastward migration of technical manpower slowed down following World War II"; and in recent years, opportunities to use their technical skills have attracted thousands of researchers and technologists into the Western states.

That it's up to business and industry to help make a good environment was suggested by Walter Bimson, chairman of the Valley National Bank of Phoenix, Ariz. Area development for industry, he said, is actually the answer to the question: What kind of a community do we want to live in?

* Such as Stauffer's Research Director Chet Arnold (left), SRI's Beardsley Graham (second from left), and Arthur D. Little's Western Manager Chris Matthew (right).

† Such as Carbide and Carbon's Western Manager Matt Scott and Oronite Chemical's Product Development Manager Bob Stirton.

Aero* PHTHALIC ANHYDRIDE

another Cyanamid quality intermediate for

ALKYD RESINS for use in surface coatings, and as an intermediate in the production of

POLYESTER RESINS, the high strength thermo-setting resins with untold commercial possibilities, and as

PLASTICIZERS for vinyl resins for sheeting, coating resins and many other uses, and for

DYES AND PIGMENTS, perfumes, insecticides, pharmaceuticals and other products.

AERO Phthalic Anhydride is immediately available in both pure white flake and molten form.

As a producer of this important intermediate for thirty years, Cyanamid is prepared to work closely with you in your phthalic anhydride applications. A new technical bulletin on AERO Phthalic Anhydride – its properties and methods of handling – has just been published. Write for your copy today. If you wish assistance on technical problems, a Cyanamid representative will be glad to call.

NEW Technical Bulletin available. Write today!

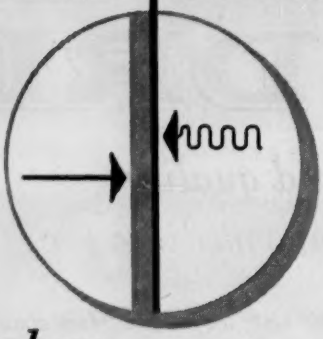
*Trade-mark

Chemicals for the chemical industry

AMERICAN Cyanamid COMPANY
MANUFACTURERS CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.
In Canada: North American Cyanamid Limited, Montreal and Toronto

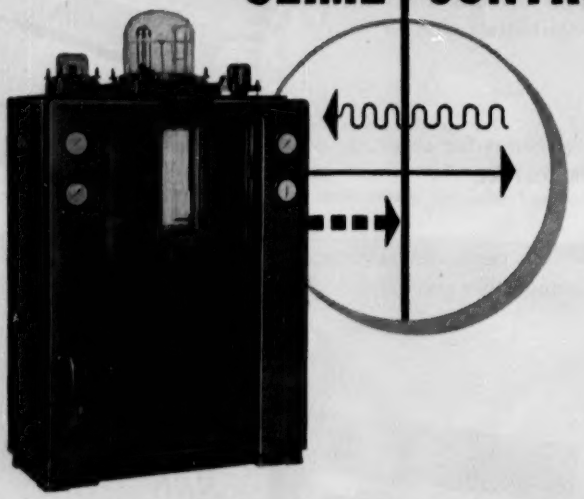
Where you need

HEAT | EXCHANGE



Be sure you have

SLIME | CONTROL



Whether you heat or cool water for make-up, process or any other use, you will need Wallace & Tiernan Chlorination to help combat slime problems introduced by water-borne bacteria or air-borne bacteria.

With slime control equipment designed for any need, built for lasting and dependable service, highly accurate and backed by over 40 years of successful application experience, Wallace & Tiernan Chlorination can help you increase the efficiency of your plant and cut operating costs. For further information write our Industrial Division.

WALLACE & TIERNAN

25 MAIN ST., BELLEVILLE 9, N. J.

CHLORINATORS • CHEMICAL FEEDERS • SCREENING EQUIPMENT • MAGNETIC SEPARATORS • PRECISION PRESSURE INSTRUMENTS • CATHODIC PROTECTION • FINE CHEMICALS

CD-39

SULFUR FROM SOUR GAS: Now rolling from Petroleos Mexicanos' plant.

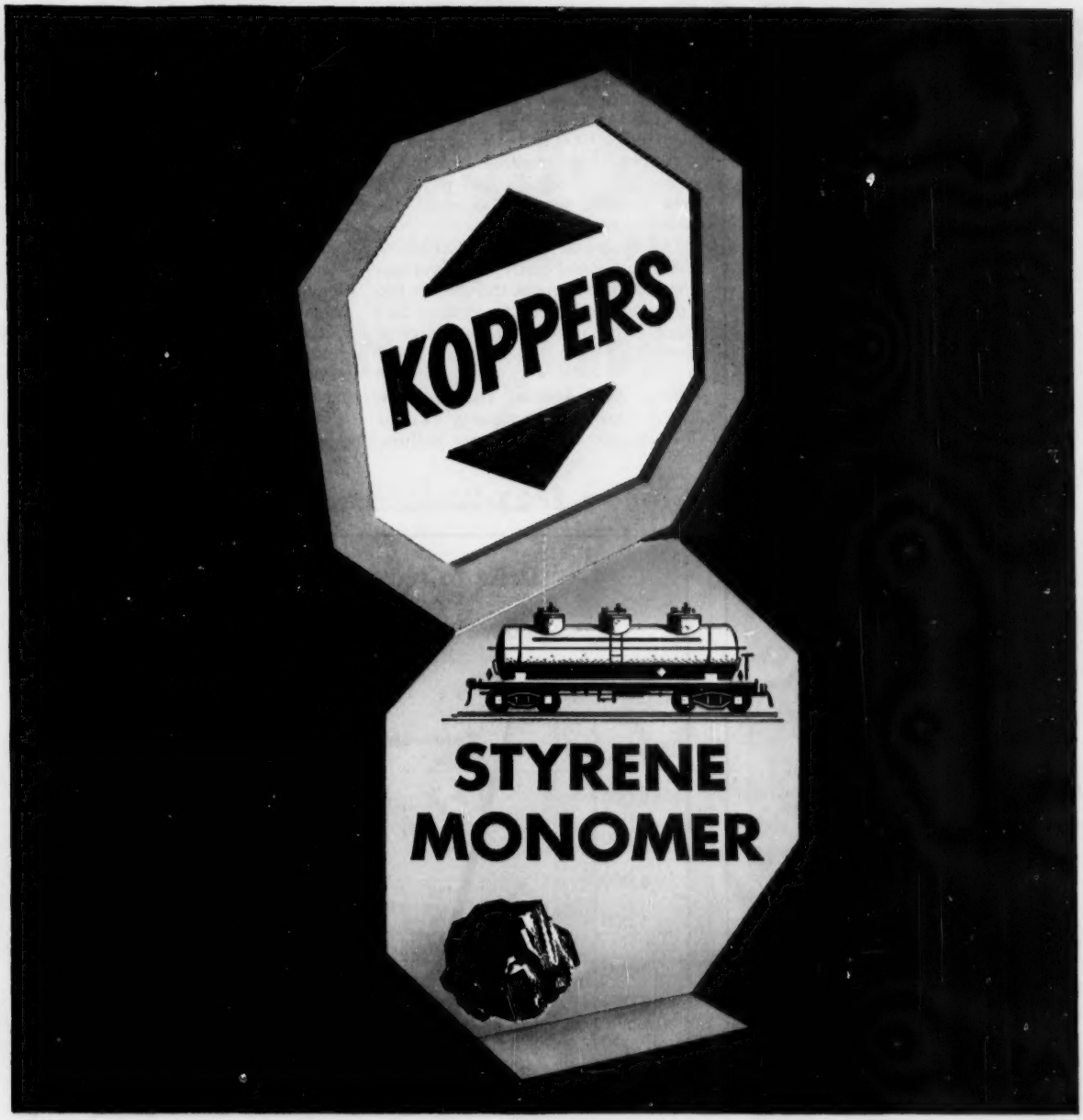
FOREIGN. . . . .

Expansion/Mexico: In four specific fields, chemical production in Mexico is making news this week:

- In addition to recently increased production of sulfur from sour gas at Petroleos Mexicanos' plant on the Gulf Coast (*see cut*), Mexican Gulf Sulphur Co. has shipped its first sulfur from operations on the Isthmus of Tehuantepec. Mexican Gulf thus becomes the first of three companies operating in the area to get into actual production. Next expected onstream: Pan American Sulphur Co. which estimates its potential at 500,000 tons/year.
- Permex's new adsorption plant at Reynosa in the northern border state of Tamaulipas will be completed by next June. Designed to process over 300 million cu. ft. of gas annually into liquid hydrocarbons, a major portion of the Reynosa plant's output is already ticketed for export.
- Snia Viscosa's $20-million cellulose plant (being built in northern Mexico) is expected to be in by next March. Utilizing timber from Mexican forests, the plant will supply 100% of the Mexican domestic market with some possibility of an export surplus.
- The Borden Chemical Co. (New York) expects to have its Mexican subsidiary in operation by the end of this year with an annual production of some 2 million lbs. of resins and industrial adhesives. Known as Casco Quimica de Mexico, the Borden subsidiary next plans to build plastics and formaldehyde-producing facilities.

•

Sulfur Strike/Sicily: Token strikes



What's Behind the Name?

● Styrene Monomer traces its chemical origin to coal, and Koppers is a leader in the coal carbonization industry. Consequently, Styrene Monomer is produced, literally, "from the ground up" by Koppers.

By carefully controlling the processing of Styrene Monomer, from the lump of coal to the delivered tank car, Koppers assures you both the highest quality and the most dependable source of supply.

Styrene Monomer is only one of many synthetic chemicals produced by Koppers. Others include Resorcinol, Di-tert-butyl-para-cresol, and Phthalic Anhydride. For further information on any of these chemicals, write:

KOPPERS COMPANY, INC.

Chemical Division, Dept. CW-12114, Pittsburgh 19, Pennsylvania

KOPPERS

Koppers Chemicals

SALES OFFICES: NEW YORK • BOSTON • PHILADELPHIA • ATLANTA
CHICAGO • DETROIT • LOS ANGELES

BORIC OXIDE

CONSIDER THIS PRODUCT OF TRONA RESEARCH

Investigate the potential uses of Trona Anhydrous Boric Acid. This boric oxide flake of highest purity has many possible commercial applications, among them being in the manufacture of metallic borides for use in tools and dies, as well as in the making of ferro alloys for special steels. Consider, too, boron carbide, another derivative, for abrasives of extreme hardness. We'll be glad to send you an experimental sample of boric oxide flake and work with you in the development of this essential chemical.

Just write—
Sales Development Department

American Potash & Chemical Corporation

3030 WEST SIXTH STREET
LOS ANGELES 54, CALIFORNIA

TRONA
INDUSTRIAL AND AGRICULTURAL CHEMICALS

were staged in Sicily's sulfur mines last week as miners registered their support for 210 men who have been on a sit-down strike 1000 ft. below ground for more than four months. Pickets occupied all the island's 360 pits, but work actually went on as usual. Involved: some 10,000 men.

The strike started in the Ciavalotta mines, in Central Sicily, 130 days ago after the management threated to fire a number of workers. Since then, 210 miners have not come to the surface in protest.

•

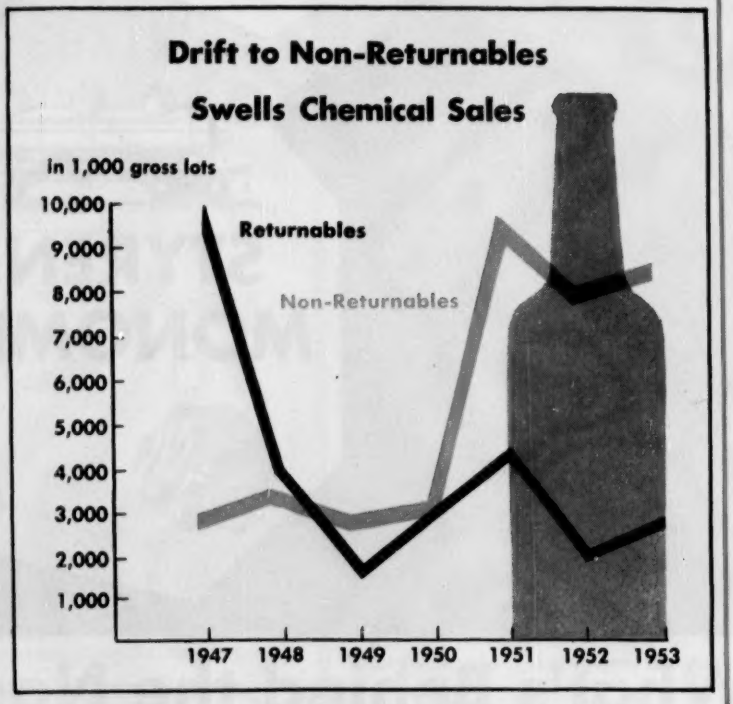
Sulfuric Acid/Austria: The privately owned Austrian company, Krems Chemie, has brought a new sulfuric acid plant onstream outside Vienna—first of its kind in Austria. Raw material (pyrites) is imported from Yugoslavia on a "compensation trade basis" in exchange for Austrian rayon.

•

Xylamon Exports/West Germany: Desowag Gmbh. (Dusseldorf, Germany) is testing some new xylamon wood preservatives in the Belgian Congo and Union of South Africa. Potential purchasers: African wood exporters who are currently suffering substantial losses from wood destroyed by death-watch beetles and fungi during the long trek from forest to ports.

First results will be available sometime early next year.

IMPACT



Brewing Market for Chemicals

WHILE TASTES may differ on contents, there's no disagreement that increasing use of nonreturnable glass beer bottles is exerting an impact on chemical sales. Although "one-way" bottles are 5 oz. lighter than returnables (7 oz. as against 12 oz.), the glass composition is the same. It averages 71% silica; the rest—soda ash, limestone, feldspar, and barium sulfate. (Color comes from less than 1% added chemicals. In amber bottles: iron sulfide, sulfur, and carbon; in green bottles: iron, cobalt and chrome oxides.) In both types of bottles (11.6 million gross/year), a waterproof albumin adhesive sticks the cork and aluminum spot to the tin plate cap. Total market: over 110,000 lbs./year of adhesives.

CASTORWAX®

12-HYDROXYSTEARIN

Its Whys and Wherefores

WHERE low-cost Castorwax is used

WHY low-cost Castorwax is used

	Extreme Insolubility	High, Sharp Melting Point 86°C.	Hardness	Non-Toxic	Good Dielectric	Resin and Wax Compatibility	Water Proofness	Non-Yellowing White	Grease Proofness	Formulation Data Available
Adhesives	✓	✓		✓		✓	✓	✓	✓	✓
Candles		✓	✓			✓		✓		
Crayons		✓	✓	✓		✓	✓	✓		
Foundry Waxes		✓	✓			✓	✓			
Gasket Impregnant	✓	✓				✓	✓		✓	✓
Grease (Lub)		✓								
Hot Melt Compounds	✓	✓		✓		✓	✓	✓	✓	✓
Leather Coatings	✓					✓	✓		✓	✓
Metal Working		✓	✓			✓				✓
Mold Lubricants		✓		✓		✓		✓		
Packings	✓	✓		✓		✓	✓			✓
Paper Coatings	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Polishes		✓		✓			✓	✓	✓	✓
Potting Compounds	✓	✓			✓	✓	✓			✓
Rubber Compounding	✓					✓				
Sealants	✓	✓		✓		✓	✓		✓	✓
Textile Finishing	✓	✓				✓				
Transfer Inks	✓	✓				✓	✓			

For complete coverage of the uses of Castorwax and formulation information send coupon for Technical Bulletin No. 7

12-HYDROXYSTEARIN AS A CHEMICAL INTERMEDIATE

POSSIBLE REACTIONS

Acylations
Iso-cyanate Coupling
Acetalization
Oxidation
Esterification
Sulfation
Saponification

THE Baker CASTOR OIL COMPANY

120 BROADWAY, NEW YORK 5, N. Y.

LOS ANGELES • CHICAGO

CW-124

THE BAKER CASTOR OIL COMPANY
120 Broadway, New York 5, N.Y.

Please send us:

☐ Technical Bulletin #7 ☐ Sample

Name.....

Company.....Title.....

Address.....

.....

SULPHURS
...BASIC
FOR
INDUSTRIES

Stauffer
CHEMICALS
SINCE 1885

Sulphur, an elemental raw material, is consumed at a rate of over 1,800,000 short tons per year. The major industry-consumers of sulphurs are expected to expand their sulphur requirements. Having met similar situations of progress ever since 1885, Stauffer maintains its facilities at a level to guarantee a large selection of sulphurs delivered with satisfactory technical services. Supplying the agricultural, pulp and paper, rubber, and other consuming industries with sulphurs suited for each, Stauffer is offering a complete line designed to meet every demand.

Call on Stauffer. The products and services will be the best at the most reasonable cost.

Stauffer...
guaranteed by its name!

STAUFFER CHEMICAL CO.
380 Madison Avenue, New York 17, N. Y.
221 No. LaSalle Street, Chicago 1, Illinois
824 Wilshire Blvd., Los Angeles 14, Calif.
326 South Main Street, Akron 8, Ohio
636 California Street, San Francisco 8, Calif.
P.O. Box 7222, Houston 8, Tex. • Apopka, Fla.
North Portland, Oregon • Weslaco Texas

FRANK BYRNES, McGRAW-HILL

GILMAN, KEGAN: For chemists in industry, are unions 'like spinach?'

Individualism on Trial

Whether industrial chemists would be better off in collective bargaining units is an old question that's now being debated more openly and more intensely by the chemists themselves. This week, members of the American Institute of Chemists' Chicago chapter are mulling over the opposing views that were aired at their latest monthly dinner meeting by a proponent of professional unionism and an advocate of individualism. Their thinking can be gauged by some of the questions they put to the speakers:

- Who determines the "merit" in "merit increases" in salary?
- How can a chemists' union be organized without antagonizing management?
- What should a chemist do if he doesn't want to join the union?

Bandwagon Roll Call: Criticizing—but not denouncing—professional unions at the meeting was attorney Albert Kegan, a former bench chemist and chemistry teacher whose law firm specializes in industrial problems that have both legal and scientific or engineering aspects. His thrust:

"If unions do so much for the chemist, why aren't more chemists on the union bandwagon?"

Kegan surmised that a union might be like spinach for scientific personnel: it may be good for them, but they aren't having any.

"All these unions ignore the law of supply and demand," Kegan contended. "When chemists are plentiful, how can any maneuver keep salaries up?" His final plea: that chemists "maintain their independence, regardless of how."

Homogeneity Favored: Speaking up for professional unions was Brice Gilman, past president and one of the founders of the Research & Engineering Professional Employees Assn., the NLRB-certified bargaining agent for nonsupervisory professional employees at the Whiting, Ind., refinery of Standard Oil Co. (Ind.)

Gilman traced the origin of professional unions back to the labor movement's upsurge during the days of the depression and the Wagner Act. When trade unions tried to organize professional scientists and engineers into plantwide unions along with craftsmen and unskilled laborers, the professional employees in several fields decided to form "homogeneous independent units of professionals, to obtain the type of representation required by the specialized problems of the professional employees."

One such unit, he continued, is REPEA, founded in 1944.

That the AIC members may have difficulty in making up their minds on the issue can be seen in the conflicting answers they got on their question about merit increases. Gilman asserted that merit raises are a continuing basis for collective bargaining, inasmuch as NLRB has ruled that determination of merit is a subject for collective bargaining. But Kegan insisted that collective bargaining must be "for the whole crowd, and is thus inconsistent with merit increases for individuals."

Louisville Method

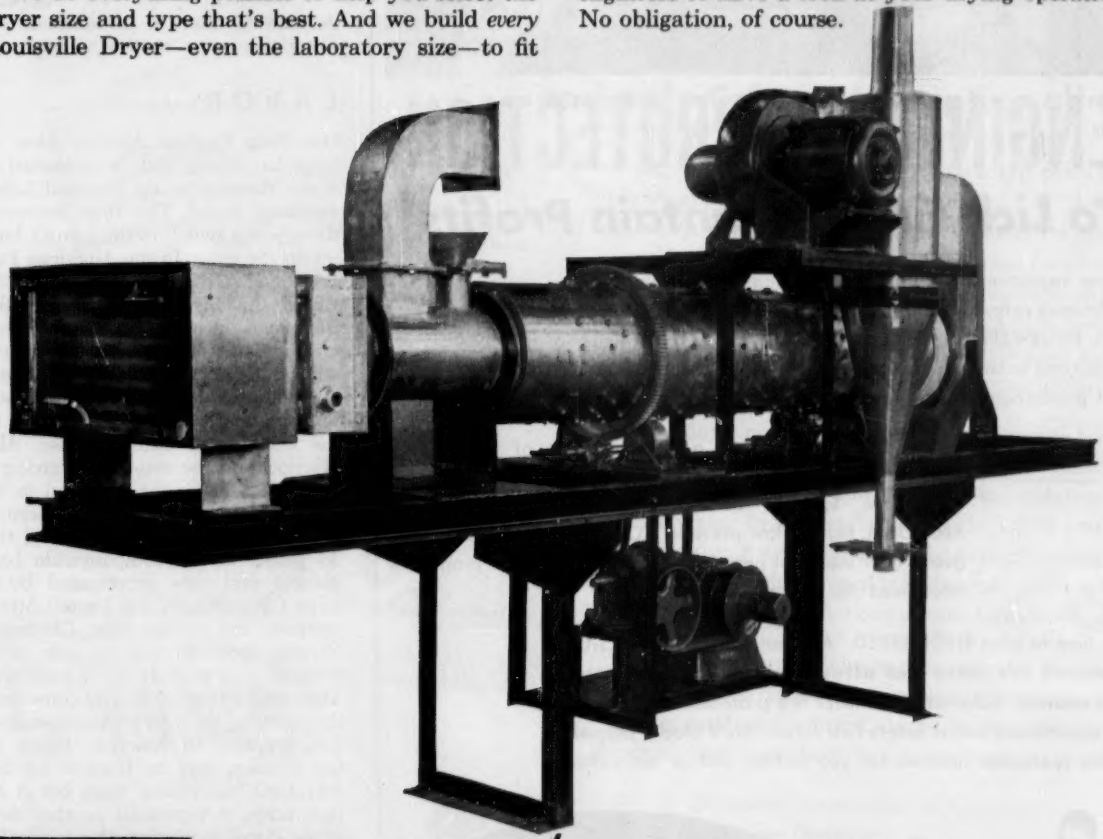
how **BIG** should a dryer be?

"Baby" Louisville Dryers do a man-sized production job for chemical firm

A large chemical firm has twice bought small, laboratory-size Louisville Dryers to serve as pilot plants for new materials. In both cases, their engineers were amazed to find the pilot dryers were producing sufficient quantities to supply the market!

We do everything possible to help you select the dryer size and type that's best. And we build *every* Louisville Dryer—even the laboratory size—to fit the job, and to give years of satisfactory performance at rock-bottom maintenance cost.

Let Louisville's 53 years of drying experience, spanning thousands of installations for all types of industry, work for you. Why not ask one of our engineers to have a look at your drying operation? No obligation, of course.

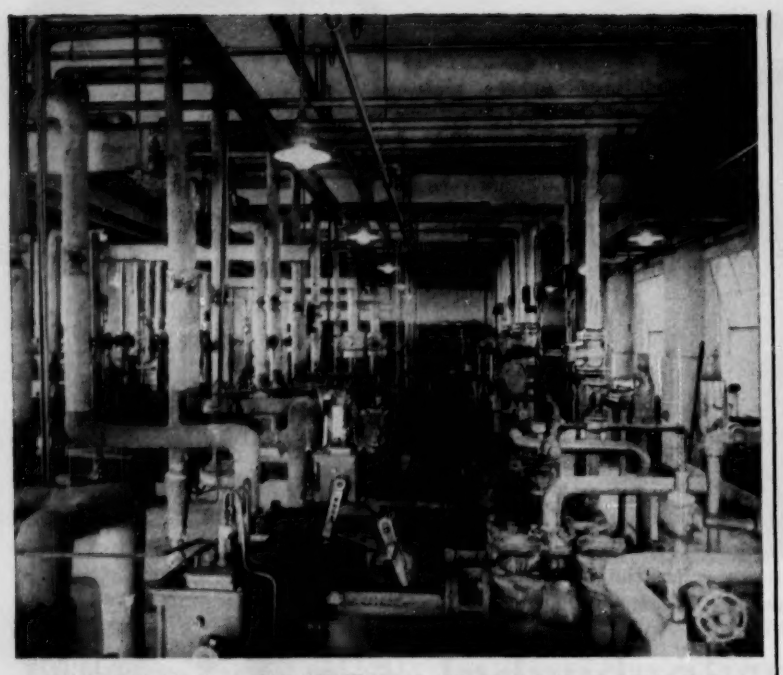


PROCESS EQUIPMENT DIVISION GENERAL AMERICAN TRADE MARK

LOUISVILLE DRYING MACHINERY UNIT
over 50 years of creative drying engineering

GENERAL AMERICAN TRANSPORTATION CORPORATION
Dryer Sales Offices: 139 South Fourth Street, Louisville 2, Kentucky
General Offices: 135 South LaSalle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario
OFFICES IN ALL PRINCIPAL CITIES
Other General American Equipment: Turbo-Mixers • Dewaterers Towers • Tanks • Pressure Vessels

For dependability see General American—creative engineering, design, construction, installation



ENGINEERED PROTECTION

To Lick Fire—Maintain Profits!

Close inspection reveals much more than meets the eye in this petroleum refinery pump room. "Automatic" FIRE-FOG protection, ENGINEERED to this specific risk, is ready at all times to detect and extinguish fire, should it threaten to destroy property, halt production, reduce profits.

This is but one type of a wide variety of fire-fighting systems designed, manufactured and installed by "Automatic" Sprinkler Corp. of America. Others employing AIR FOAM, high or low pressure CO_2, Dry Powder, etc. stand guard over scores of petroleum and petro-chemical properties throughout the world.

The time to plan ENGINEERED "Automatic" FIRE PROTECTION is **before** fire strikes—not **after** fire has destroyed. Contact your nearest "Automatic" Sprinkler fire protection engineer for an appointment with a Safety First future. He'll gladly prepare a fire protection analysis for you without cost or obligation.

"Automatic" Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO

Offices in Principal Cities of North and South America

WIDE WORLD

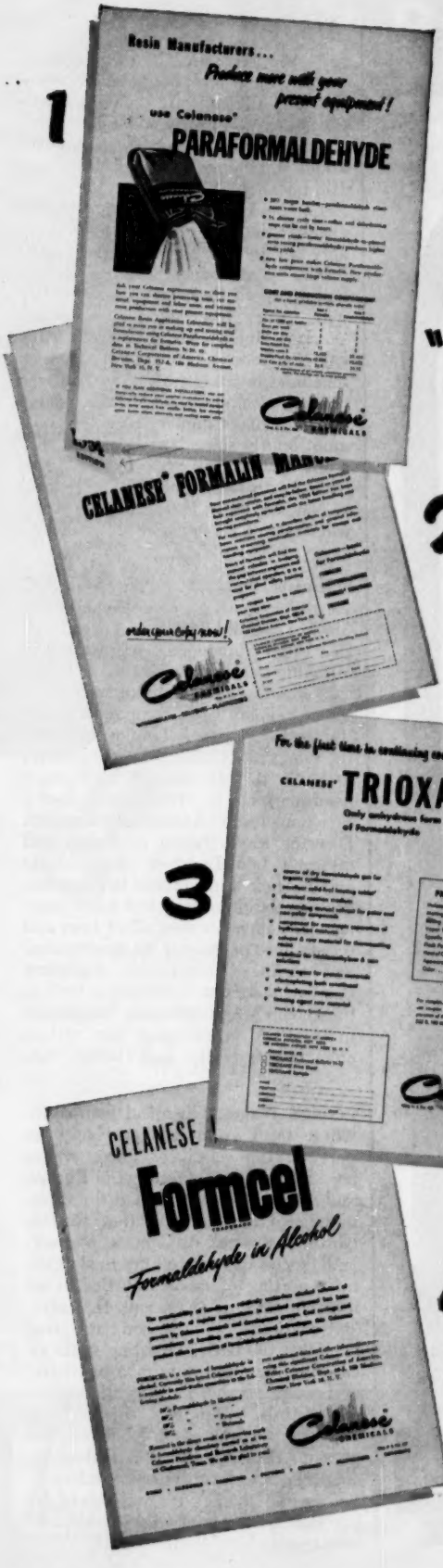
NLRB'S MURDOCK: In industrial-type bargaining units, another wedge.

LABOR. . . . . .

One Step Farther: Another blow at large bargaining units is embodied in a new decision by the National Labor Relations Board. This time, however, there was a switch in the board's lineup on the issue. In the American Potash case *(CW, March 13, p. 15)*, Chairman Guy Farmer headed the three-man majority that permitted craft unions to try to carve small units out of previously existing plantwide bargaining units, and Ivar Peterson was the lone dissenter. Last week, in the Continental Can Co. case, Abe Murdock led the majority in giving a small CIO union the go-ahead in its move to take over the bargaining rights for lithographers at one of the 33 plants in the companywide bargaining unit now represented by a large CIO affiliate, the United Steelworkers; and in this case, Chairman Farmer crossed over to join with Peterson in a strongly worded dissent. The small union bidding to come into the picture is CIO's Amalgamated Lithographers of America. Effect of the decision may be blunted by the AFL-CIO "no-raiding" pact, but at its face value, it represents another step in the direction of strengthening craft-type labor unions at the expense of industrial-type unions.

•

Neoprene Boost: For the second time this year, Du Pont is increasing wage rates at its neoprene plant at Louisville, Ky. J. T. Delaney, the plant's industrial relations director, says the new pay rises—ranging from 3¢ to 7¢/hour—will bring the average base rate



Formaldehyde isn't "Formaldehyde" any more

It's one of 4 specialized types—designed to meet specific needs—and only Celanese supplies all 4

Suppose you're producing a low solids resin for plywood adhesives. Celanese* Formalin (37% formaldehyde in water) is your best bet. On the other hand, for a high solids urea resin, your Celanese representative can show you conclusive reasons why Celanese Paraformaldehyde (flake 91% active chemical), with its high reactivity, is your most efficient and economical source for formaldehyde.

Many producers of alcoholated resins have discovered that a Celanese Formcel* Solution of formaldehyde in a specified alcohol eliminates a costly step in the production cycle. Or, if you're looking for the most readily available source for dry formaldehyde gas, you'll want Celanese Trioxane, the anhydrous formaldehyde.

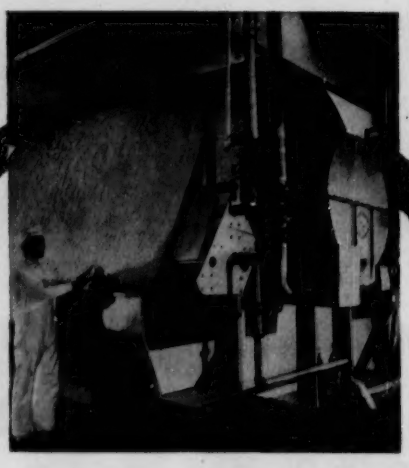
The right formaldehyde can give you the competitive edge—through lower production costs and higher product quality. Celanese—formaldehyde headquarters—can help you make the right choice.

Celanese Corporation of America,
Chemical Division,
180 Madison Avenue, New York 16.

*Reg. U. S. Pat. Off.

Celanese* CHEMICALS

IN PECTIN EXTRACTION



One FEinc Continuous Filter Replaces Two Presses and Six Men

Looking at this clean, quiet picture, you'd never know this filtration job was formerly a hot, steamy mess, requiring six men per shift to load and unload wet, acid-laden press blankets, racks and press cars of two stop-and-go hydraulic presses.

Now it's a smooth-running, *really continuous* filtration operation, on this big FEinc String Discharge Filter. Only one operator is now required, with very little to do except watch the cake roll off hour after hour. Even the daily washup takes little time and effort.

Pectin recovery is reported to be as good as formerly. Losses due to leakage and spillage have been eliminated. The dynel cloth on this filter lasts more than a year . . . a substantial saving in the cost of filter cloth.

The pulp is lifted from the filter by continuous orlon strings . . . the famous FEinc String Discharge which successfully handles all types of cakes ranging from thin slimes to thick heavy sludges. There's no smearing, blinding or plugging of the fabric, and no loss due to "blow-back."

You too can improve production rates at lower cost in many of your filtration operations with the continuous . . . *really* continuous . . . FEinc String Discharge Filter. Find out more about what these versatile efficient filters can do for you. And ask about the new FEinc Horizontal Rotary Vacuum Filter for crystalline or fibrous pulps. Write today.

Ask for Bulletin 103

Filtration Engineers, Inc.

CUSTOM DESIGNERS AND MANUFACTURERS OF ALL TYPES OF CONTINUOUS FILTRATION EQUIPMENT

FEinc

40 155 ORATON STREET • NEWARK 4, N. J.

up to $2.21/hour. The new increases were granted under a wage reopening clause in the contract signed last winter with the independent Neoprene Craftsmen's Union, at which time the 1500 employees received a straight 10¢ boost.

In pocketing their bigger pay checks, the neoprene workers probably will be reflecting that they could hardly have done any better if they had accepted the invitation to affiliate with the International Chemical Workers Union (AFL) last year. Now enjoying one of the highest wage schedules in the chemical industry, the neoprene employees have an average pay rate that's higher than the maximum hourly rate at many plants. Example: with new pay hikes ranging from 2¢ to 4¢/hour, an ICWU local at Niagara Falls, Ont., now has a top wage rate of $2/hour.

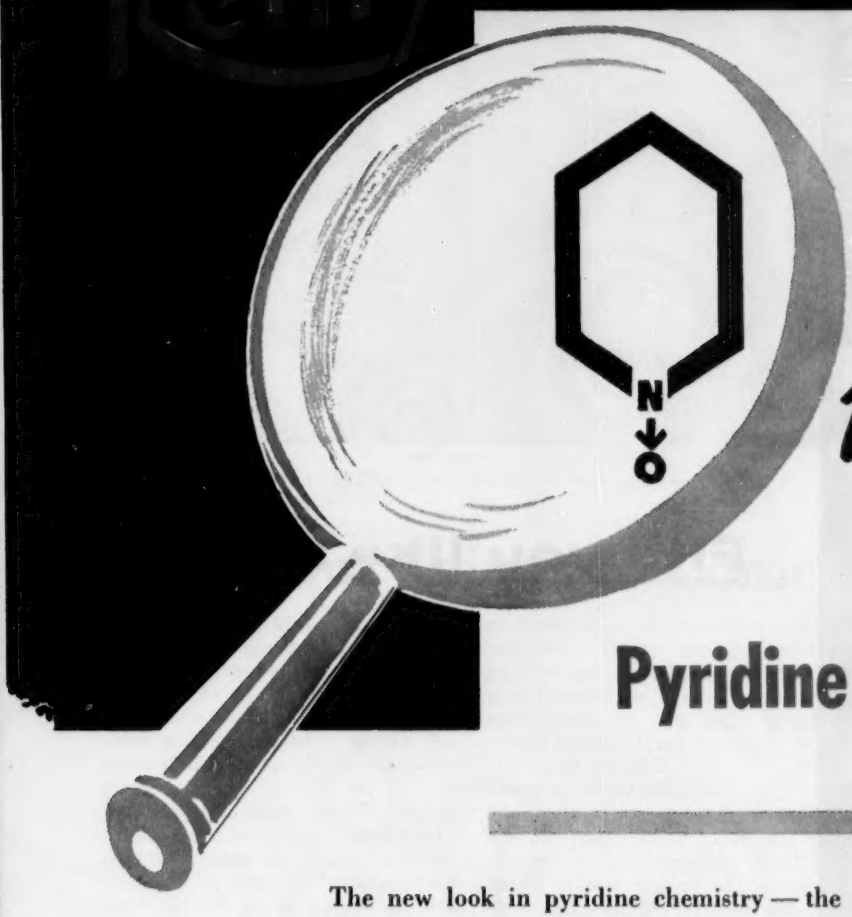
•

Scientists' Spokesmen: Even though your company's professional employees probably aren't unionized yet, they're now unofficially represented in Washington. The Engineers & Scientists of America—which hopes to eventually have all large companies' scientific and engineering employees under the wings of its affiliated unions (*CW, May 15, p. 24*)—has set up its new headquarters in Washington, with President Joseph Amann and Research Director Kaye Brown on board and attorney Leo Lightner some blocks away. Their appearances before Congressional committees and labor-management agencies may affect laws and regulations pertaining to professional and technical employees, including those who are not organized as well as those who are in collective bargaining units. ESA is plugging for certain amendments to the Taft-Hartley Act.

•

Foreign Wages: Chemical companies whose tariff arguments are based in part on the relatively lower wages paid by rival manufacturers in Europe and Asia will be hoping that the International Labor Organization session, closing last week in Geneva, Switzerland, succeeds in its efforts to sharpen up reporting of labor statistics in all member nations. At present, ILO says, "international comparison of real wages on the basis of existing statistics can be attempted only in a restricted and rough manner for a small number of countries." However, there's been considerable progress in labor data reporting. ILO says that more than 90 countries now furnish current information in one or more major fields of labor statistics, compared with only 40 countries before World War II.

Pyridine-N-Oxide

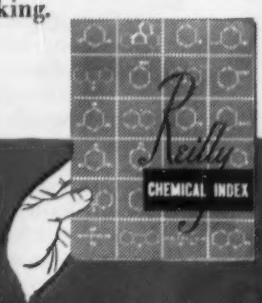


...the new look in Pyridine Chemistry

The new look in pyridine chemistry — the use of Pyridine-N- Oxide — is making many processes for producing pyridine compounds obsolete.

Pyridine-N-Oxide is attracting a lot of attention. If you are now using pyridine or its derivatives, contact us about the advantages of Pyridine-N-Oxide.

Now available are Pyridine-N-Oxide, 2-Picoline-N-Oxide, 4-Picoline-N-Oxide and 2,6-Lutidine-N-Oxide — and more are in the making.



Reilly COAL TAR CHEMICALS

REILLY TAR & CHEMICAL CORPORATION

MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA

Sales offices in principal cities

Heterochemicals • Coal Tar Chemicals • Acetylene Derivatives

Fits you like a glove

Complete liquid storage systems individually tailored to fit your requirements are available to all without capital investment! Individual pipelines, pumps and tanks, can handle as little as 10,000 or as much as 10,000,000 gallons—with complete privacy—permitting storage of chemicals, petrochemicals, petroleum products, food products and similar bulk liquids as required.

Our modern, expanding storage facilities at Perth Amboy and Woodbridge, New Jersey and at Houston, Texas are equipped to accommodate more than 400,000,000 gallons. We are at your disposal for emergency or regular storage and shipments . . . with complete tanker, barge, tank car, truck and drum facilities.

Our controlled handling of bulk liquids is based on unrivalled facilities, extensive experience and a service policy which keynotes the personal touch. You'll like doing business with Hess!

Full details on request.

HESS

HESS, INCORPORATED
Perth Amboy, N. J.
Valley 6-1000

HESS TERMINAL CORP.
Houston, Texas
Glendale 3-7195

You can depend on HESS!

WIDE WORLD

TAFT, STRACKBEIN: Their differences over tariffs is a . . .

Sample of Things to Come

Raise protection against foreign imports or sell more U.S. goods abroad. Those are the battle cries that will ring out in Washington early next year when Congress convenes to consider another extension of the Reciprocal Trade Act for a three-year period.

Outlook now, most observers agree, is in favor of an extension of the act—largely because the Democrats (traditionally in favor of lowering tariff barriers) will be in control of both Houses of Congress.

But of more immediate importance to chemical companies is the shape of arguments to come. Sounding the keynote last week at Georgetown University's School of Foreign Service in Washington were two of the more vigorous spokesmen on opposite sides of the foreign trade and tariff question—Charles P. Taft, president of the Committee for a National Trade Policy, and O. R. Strackbein, chairman of the Nationwide Committee of Industry, Agriculture, and Labor — on Export - Import Policy. Neither is an out-and-out "free-trader"; their major points of contention lie in how the gradual and selective reduction of tariffs should be handled to permit an expansion of trade in particular industries.

This is how their reasoning goes:

Says Taft:

"In a number of very important industries, the competitive price factor is the main issue in the tariff question. If damage results, thought must be given to facilitating the movement of resources of capital and labor to other activities. This is not compensation for damage, but the use of existing governmental devices . . . does not mean grants . . . but could be interpreted to mean three year loans if not elsewhere available."

Counters Strackbein:

"Competitively . . . our producers are not free. Their hands are tied securely . . . in precisely those elements of cost that mean the most—labor and materials. It does not then appear fair to subject these producers and their employees to a form of competition that is not burdened in the same degree. The test should not be whether an industry can compete with foreign industries that do not have to pay U.S. wages, U.S. raw material prices and taxes. The only fair test of efficiency is comparison with producers who are equally situated with respect to fixed costs and burdens . . . and such a test would necessarily keep the test right here at home."

Continues Taft:

"Why is it then that U.S. companies are able (against this kind of low wages abroad) to export $12 billion worth of goods every single year? We did it last year, we did it the year before. The only possible reason lies in the quantity of U.S. management personnel—almost numerically double that in most European countries. They don't have labor relations people; they don't have market research people; they don't have personnel people; they don't have many of the staff services that we think are essential in a well-run company. It all adds up to less efficient management, with exactly the same machines."

Answers Strackbein:

"Mr. Taft has a great deal to say about our high productivity offsetting the low wages abroad. We have hundreds of industries and thousands of companies that do not and can not enjoy the advantages of mass production. Now what is to happen in those instances when they are confronted by more and more foreign competition? And what about the fact that most European industry is cartelized?"

Responds Taft:

"The question of the effect of cartelization is easy to answer. It's the total production of the cartel that must be profitable; and therefore competition with the cartel is something American competitive industry can certainly meet. There may be problems of patents and know-how, as there were in the chemical industry prior to the war—prior to the first war. But that consideration is not an important one today. We are ahead of Germany, for instance, in petrochemical development, as contrasted with coal-tar derivatives in the synthetic-organic chemicals field. So that I would say that the cartelization is an adverse factor, so far as Europe is concerned over-all.

"Now Mr. Strackbein, you have called yourself a moderate protectionist. Now, sir, does our present principle of reciprocal trade agreements disagree with your stand?"

Maintains Strackbein:

"It would if the 'escape clause' were properly administered in accordance with the act that placed it on the statute books. But since the administration of a lower tariff has gravitated into the hands of the Executive, into the hands of the State Dept., the law of Congress has been virtually nullified, so that there is, in fact, in practice, virtually no remedy against injury.

"The very concept of the trade agreements program of bargaining for concessions from other countries, in my estimation, is not a sound procedure unless you have a great deal to bargain with. Once you have leveled the tariff wall as it has been leveled by 75%, and you're cutting to the quick, then it seems to me, there is no justification to say, 'we will reduce the tariff on hats, or on pottery, on glassware, on tuna fish, or on anything else.' And there's no excuse in my book for hurting any industry in order to benefit another so that they can export more to some other countries."

Delta Country: No Lack of Water

Water for processing, water for shipping, water for cooling . . . southeast Louisiana's rivers, lakes, bays and bayous —once haunted by pirate ships—now, augmented by man-made coastwise channel, are fluid framework for big industrial build-up.

PROCESS PLANTS IN BAYOU LAND

American Cyanamid Co., Waggaman
Armour Fertilizer Works, New Orleans
Bay Petroleum Corp., Chalmette
Caldwell Sugars Cooperative, Thibodaux
Coastwise Petroleum Co., Good Hope
Colonial Sugars Co., Gramercy
Commercial Solvents Corp., Harvey
Cities Service Oil Co., St. Rose
Davison Chemical Div. of W. R. Grace & Co., Gretna
Delta Match Corp., Kenner
Delta Petroleum Co., New Orleans
Dixie Chemical Co., New Orleans
Freeport Sulphur Co., Bay St. Elaine
Freeport Sulphur Co., Chacahoula
Freeport Sulphur Co., Garden Island Bay
General Chemical Div. of Allied Chemical & Dye Corp., Harvey
Godchaux Sugars, Inc., Raceland
Godchaux Sugars, Inc., Reserve
Henderson Sugar Refinery, Inc., New Orleans
Ingram Products Co., Chalmette
International Lubricant Corp., New Orleans
Kaiser Aluminum & Chemical Corp., Chalmette
Lion Oil Co., Luling
Loisel Sugar Co., New Orleans
Lone Star Cement Corp., New Orleans
Magnet Cove Barium Corp., New Orleans
Niagara Chemical Div. of Food Machinery & Chemical Corp., Belle Chasse
Oronite Chemical Co., Oak Point
Pan American Southern Corp., Destrehan
Petco, Marrero
Products Research Service, Belle Chasse
Publicker Commercial Alcohol Co. of La., Westwego
Pure Carbonic Co., New Orleans
Shell Chemical Corp., Norco
Shell Oil Co., Norco
Sherwood Refining Co., Gretna
Stauffer Chemical Co., Harvey
Southdown Sugars, Inc., Houma
Southdown Sugars, Inc., Thibodaux
Southdown Sugars, Inc., Vacherie
Swift & Co., Harvey
U. S. Industrial Chemicals Co., Harvey
Valentine Pulp & Paper Co., Lockport
Valentine Sugars, Inc., Lockport

Crescent City's 4th Phase: Industry Reigns

From cabin-dwelling colony to industrial center of the deep South—that's the capsulized history of colorful, venerable New Orleans.

Chemical process industries—long established in this region—have been setting the pace in the city's current plant-building boom.

New Orleans' big attractions for chemical concerns: port facilities for both ocean shipping and inland waterway barges, plus plenty of water, natural gas, oil, sulfur, salt.

Early next year, molten sulfur will start flowing at Freeport Sulphur's new mine at Chacahoula; and with this enhanced supply of close-at-hand sulfur, New Orleans' energetic civic committee will have still another "talking point" in its rapidly succeeding campaign to industrialize the 226-year-old city and the outlying areas.

Chemicals have been playing a major role all along in the industrial build-up that began here about 15 years ago. The chemical companies came in mainly because of the region's mineral wealth—Louisiana ranks second among the 48 states in production of natural gas and sulfur, third in petroleum, fourth in salt—and the presence of the chemical and petrochemical plants has made the area more inviting for other industries, such as Chrysler's $70-million engine plant.

Past Lives On: The Crescent City—so called because it grew up inside a half-circle loop in the mighty Mississippi River—is now welding for itself an industrial economy that contrasts sharply with the city's storybook past. New Orleans was a seat of colonial government in the old French and Spanish empires. After the Louisiana Purchase in 1803, it became the center of commerce and culture for the Deep South's plantation society, the terminus for the side-wheeler and stern-wheeler river boats of the 19th century. In recent decades, the city has been renowned as a tourist town, particularly for the Mardi Gras celebration that climaxes its annual Christmas-to-Lent festive season.

Now well into its fourth phase—industrialization—New Orleans still retains much of its past. French-speaking Creoles still live in the city's famous Vieux Carre; Southern cotton is still shipped out in quantity from the wharves that provide easy "parallel parking" for ships and barges; and New Orleans hotels and motels will be teeming with tourists next February for the Mardi Gras parade that will mark the 200th anniversary of the coming of the French Acadians following their expulsion from Nova Scotia by King George II.*

Levees Shield Lowlands: With much of its levee-protected land lying below sea level, New Orleans has had monumental difficulties in years gone by with floods, water supply, sanitation and disease; but that these problems have been surmounted can be adjudged from population figures for Orleans parish:

1900	287,104
1920	387,219
1940	494,537
1950	570,445

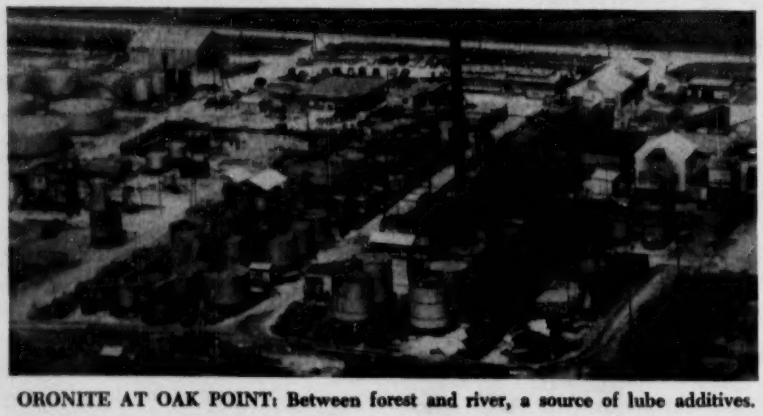
Industry, too, has confidence in New Orleans and its future. The chemical process industries, for ex-

* Narrated in Longfellow's poem, "Evangeline."

FREEPORT SULPHUR AT BAY STE. ELENE: One of firm's three new mines.

CYANAMID AT WAGGAMAN: Near nation's biggest river, acrylonitrile producer.

LION CHEMICAL AT LULING: Now in production, nitric and ammonia units.



ORONITE AT OAK POINT: Between forest and river, a source of lube additives.

Story begins on p. 34

ample, have invested some $400 million in the area for new plants and enlargement of older plants in recent years, and the end still isn't in sight. In just a few weeks, for example, construction will begin on a pilot plant that may give way later on to a full-scale plant for extracting nickel and cobalt from ores shipped in from Cuba.

Largest new chemical process plant in the New Orleans vicinity is the $175-million aluminum smelter completed last year by Kaiser Aluminum & Chemical at Chalmette, about six miles downstream from the French Quarter. Another giant is American Cyanamid's $67-million Fortier Works at Waggaman, some 14 miles upstream from the French Quarter. Nearby is Lion Chemical's $31-million Barton plant, which began production of ammonia and fertilizers this year.

River Gets Credit: Other recent arrivals include the $2.6-million fine paper mill built by Valentine Pulp & Paper Co.; Freeport Sulphur Co. mines at Garden Island Bay and Bay Ste. Elene; and a $2.6-million installation by Delta Match Corp. Freeport Sulphur's three new mines—including the Chacahoula works now being completed—represent an outlay in the neighborhood of $20 million.

At the same time, chemical process plants already long established in the area have been growing larger and larger. Oronite Chemical recently spent $2 million for new capacity at its Oak Point plant about eight miles southeast of the city; Pan American Southern has paid out nearly $10 million for additional units some 20 miles west of New Orleans; and in that same neighborhood, Shell Oil and Shell Chemical have invested more than $45 million in their refinery and chemical plant at Norco.

Now, as in showboat days, probably New Orleans' biggest single asset is its ideal location for both inland and ocean shipping. The Latin American countries, the entire South, and a major part of the mid-continent area can be served quickly and economically from this port. Also serving to bring cargo to and from the city is the Intracoastal Waterway, which provides a protected shipping lane from Florida to the southern-most tip of Texas. Other attractions: a virtually inexhaustible supply of water, Louisiana's 10-year tax exemption plan, and the new law permitting cities and counties to build plants for long-term leases.

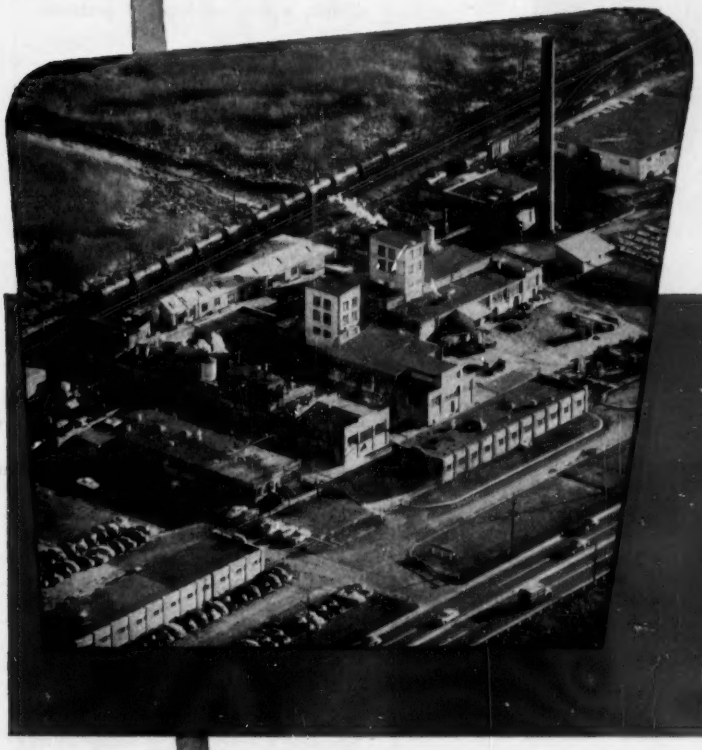
for improved production

of esters, amides, ketones, peroxides, ureides and many other acid derivatives,

ACID CHLORIDES (RCOCl)

by TRUBEK

In many cases, acid chlorides are indispensable. Advantages include better yields and conversions, shorter reaction times, lower reaction temperatures and lighter colored finished products:



Amides from amines or amino acids

Esters from alcohols

Ketones from aromatic hydrocarbons

Peroxides from sodium peroxide

Ureides from ureas

Available carload, less carload

Acetyl Chloride
Butyroyl Chloride
Caproyl Chloride
Capryloyl Chloride
Cinnamoyl Chloride
Lauroyl Chloride
Palmitoyl Chloride
Phenylacetyl Chloride
Propionyl Chloride
and
others, made to order

INTERMEDIATES DIVISION

THE TRUBEK LABORATORIES

INCORPORATED

ESTABLISHED 1932

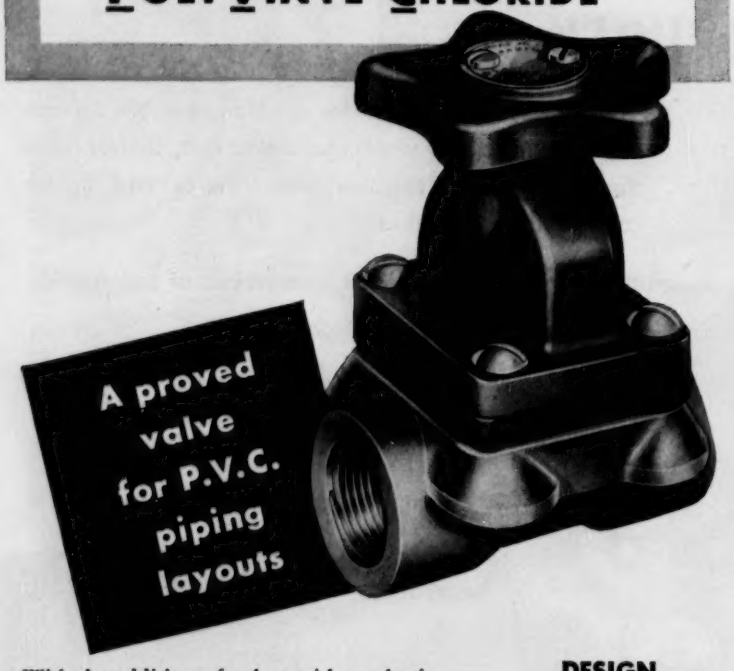
East Rutherford, New Jersey

Announcing

HILLS-McCANNA

Saunders Patent

DIAPHRAGM VALVES with bodies of POLYVINYL CHLORIDE



With the addition of valves with unplasticized, rigid polyvinyl chloride (P.V.C.) bodies, Hills-McCanna further expands the most extensive line of corrosion-resistant valves. Now, the corrosion resistance and rugged durability of P.V.C. is available in a valve of proved and accepted design.

Hills-McCanna P.V.C. valves are available in handwheel or lever operated types or with air cylinder, diaphragm motor or electric motor operators for remote or automatic control. Sizes range from ½" through 2". All regular diaphragm materials are available (rubber, Neoprene, Kel-F, Teflon, etc.). Screwed ends are standard. Slip fits available on special order.

Write for further information. HILLS-McCANNA CO., 2445 W. Nelson St., Chicago 18, Ill.

DESIGN DETAILS

- **Working parts isolated from flow.**
- **No packing.**
- **Leaktight under pressure or vacuum.**
- **Simple pinch clamp closure principle.**
- **Minimum maintenance even in the severest service.**

HILLS-McCANNA

saunders patent diaphragm valves

Also manufacturers of
Chemical Proportioning Pumps • Force-Feed Lubricators
Magnesium Alloy Sand Castings

B & I. . . . . .

WIDE WORLD

JUDGE McGOHEY: During pendency of suit, a ban on disputed perfumes.

LEGAL. . . . . .

Quick Injunction: Within three days after cosmetics manufacturer Hazel Bishop, Inc., had brought suit against Laurel Products Co. and Gray Distributors, a temporary injunction had been issued by Federal Judge John F. McGohey to halt Laurel and Gray's sale of perfume under the "Hazel Bishop" tradename while the case is pending. Laurel and Gray consented to the order, and Hazel Bishop put up a $5000 bond to guarantee payment of damages in case Laurel and Gray are found to have been wrongfully enjoined.

In its complaint, the Hazel Bishop firm charged that the defendants were infringing the Hazel Bishop tradename, which was registered in the U.S. Patent Office last Jan. 5, and in which the company has invested more than $12 million in advertising since 1949—including about $5 million during the 12 months ending Oct. 31. HB is asking a permanent injunction and triple damages.

•

Chemical Cops: In the wake of the explosion at Charles W. Berg Laboratories in Philadelphia *(CW, Nov. 27, p. 32)*, that city's municipal government is drafting a proposed law that would permit the city attorney to bring criminal action against any firm or person violating the building code. Also, Commissioner Walter Pytko, of the Dept. of Licenses and Inspections, is planning to put a chemical engineer on his staff to inspect the city's chemical plants; and he's asking for a new law requiring the operator of

Cyanamid announces an important New Booklet

describing four AERO* Specialty Catalysts

NR-1 NR-2

HI-3

FM-1

The most active and stable catalysts made . . .

- **For Hydrogen Production**
  - **by Methane-Steam Reforming**
  - **by Water-Gas Shift Reaction**
- **For Ammonia Synthesis**

These catalysts represent the latest advances in catalyst manufacture and are the result of extensive product engineering. To assure the catalyst user optimum operating efficiency at all times, these five general properties have been built into the AERO Specialty Catalysts.

1. High catalytic activity.
2. Stability of high activity through long periods of use.
3. High physical strength for greater resistance to physical breakdown.
4. Optimum pellet size and shape to insure low pressure drop through catalyst bed.
5. Low bulk density and low volumetric cost.

The booklet contains Chemical and Physical Properties and Operating Characteristics for each of the four catalysts, as well as a description of the N.E.C. Ammonia Synthesis Process. Write for your free copy on company letterhead today.

*Trade-mark

AMERICAN Cyanamid COMPANY

REFINERY CHEMICALS DEPARTMENT

30 Rockefeller Plaza, New York 20, N. Y.

In Canada: North American Cyanamid Limited, Toronto and Montreal

SAFE storage for your product

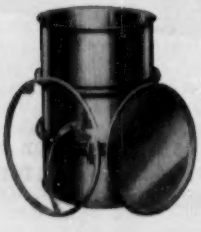
LOW maintenance costs for you with

REPUBLIC

BARRELS AND DRUMS OF ENDURO®

STAINLESS STEEL

Solid or tight head drum above and patented Ringlox removable head drum shown below are but two of many styles available in the complete Republic line.



● ENDURO Stainless Steel in Republic Barrels and Drums gives you proved protection against product contamination. It neither affects nor is affected by most chemical and food products. And when you put your product in ENDURO Drums and Barrels, you can expect to save plenty on maintenance costs! ENDURO is tough and strong—it resists rough use and abuse indefinitely—resists corrosion—never has to be painted—is so easy to clean.

Reduced maintenance and longer service life actually make the greater product protection of ENDURO available to you in Republic Barrels and Drums on an *economical* basis. Many styles to choose from in sizes to 55 gals. Write for further information.

* * *

Other popular Republic containers in the chemical and food field are Lacquer-Lined Steel Barrels and Drums. Durable Lacquer Lining is neutral to a broad range of chemical and food products. Lacquer-Lined Barrels and ENDURO Stainless Steel Barrels both furnished with or without standard bungs. Also hot dipped galvanized or hot dipped tinned.

REPUBLIC STEEL CORPORATION
Pressed Steel Division
466 Walnut Street, Niles, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Dept.: Chrysler Bldg., New York 17, N.Y.

REPUBLIC STEEL

REPUBLIC

METAL BARRELS AND DRUMS

B & I. . . . . .

each plant handling "dangerous chemicals" to hire a full-time graduate chemist.

Meanwhile, the two owners of Berg Laboratories are planning to appeal the decision of Magistrate Elias Myers, who fined them a total of $1700 for violation of various ordinances. Charges included failure to obtain a permit for storage of flammable materials, failure to locate two tanks properly, and failure to dig protective trenches around the tanks.

Newly involved in the litigation springing up in connection with the explosion is Dow Chemical Co. One of the injured firemen charges that Dow filled the tank with "dangerous chemicals" without checking safety aspects.

•

Oxygen Equipment Suit: In U. S. District Court at New York, Hydrocarbon Research, Inc., is attacking M. W. Kellogg Co.'s patent No. 2,460,859. In particular, Hydrocarbon Research wants the court to declare that this patent is not infringed by certain equipment designed by Hydrocarbon Research to produce oxygen from air; and the court is being asked to order Kellogg not to assert any such infringement.

KEY CHANGES. . .

Norman Walker, to vice-president, Fischer Scientific Co., Pittsburgh, Pa.

B. C. Ohlandt and **Roy F. Coppedge, Jr.,** to directors, National Distillers Products Corp., New York City.

George H. Freyermuth, to executive vice-president and director, Esso Export Corp., New York City.

Burton F. Bowman, to general sales manager, Fine Chemicals Div., American Cyanamid Co., New York City.

C. G. Stupp, to vice-president, Barrett Div., Allied Chemical & Dye Corp., New York City.

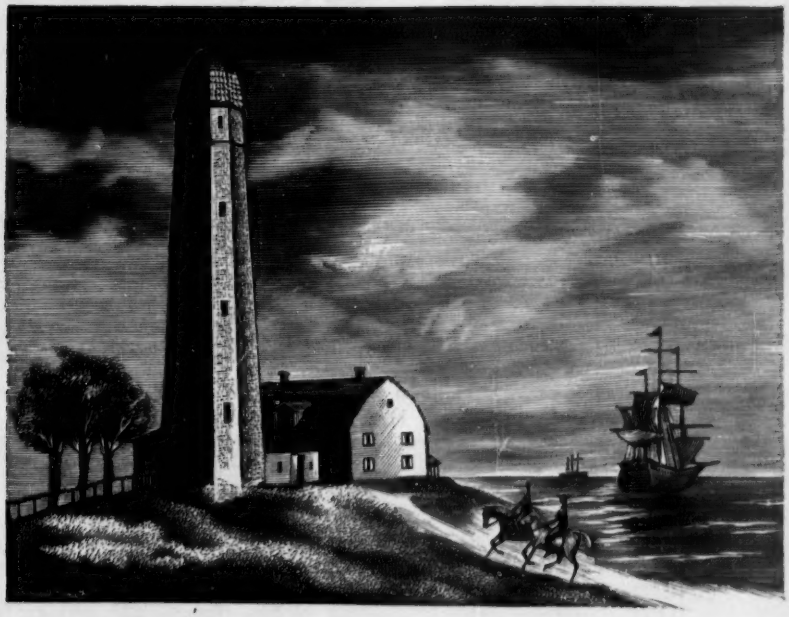
William T. Wood, to general director, manufacturing, Textile Fibers Dept., Du Pont Co., Wilmington.

John J. B. Fulenwider, to vice-president and member of the executive committee, Hercules Powder Co., Wilmington.

Lee A. Keane, to director, chemical sales, **Robert H. Cornwell,** to director, production, and **Stuart Schott,** to director of research, National Distillers Products Corp., New York City.

Carl W. Patton, to general manager, advertising and public relations, Bakelite Div., Union Carbide and Carbon Corp., New York City.

FAMOUS LIGHTHOUSES OF AMERICA



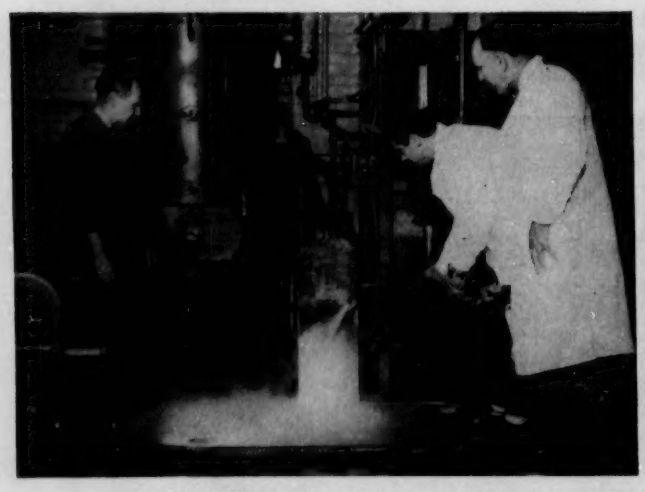
SANDY HOOK LIGHTHOUSE, built in 1764 by the Colony of New York, is the oldest original light tower in use in the United States. A massive structure, octagonal in form with walls of stone seven feet thick at the base, it stands today as it was built except for an added inner lining of brick. This famous lighthouse is located on a narrow peninsula on the New Jersey coast sixteen miles due south of New York City and still helps to guide ships into New York's lower bay.

Sure guidance for users of electrochemicals is the long-recognized quality of Niagara Alkali products. A pioneer in this field, Niagara has helped manufacturers improve their products and the efficiency of their processes through the use of Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

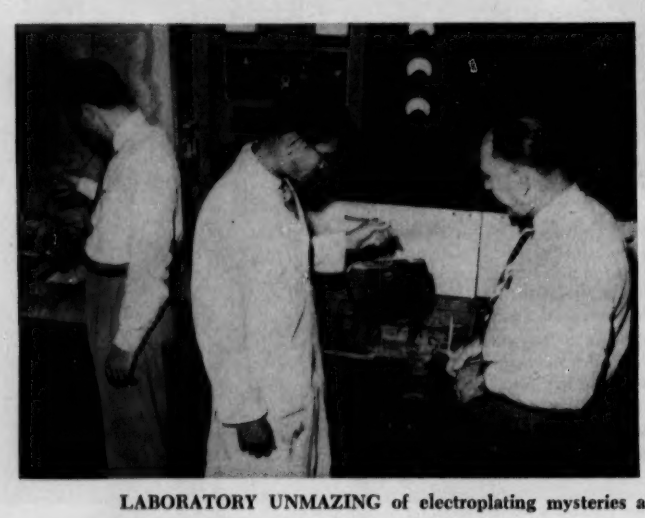
NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

Practice at home . . . **proves out in field . . .**



ARMS-DRILLING trainee gets feel of steam gun, important weapon in active service work.



LABORATORY UNMAZING of electroplating mysteries at start solves many a customer puzzle later.

Technical Service Upgrades the Product

In the chemical industry, upgrading a product has become, especially of late, a favorite method of increasing, or even realizing, a profit. The usual upgrading route is to transform the material into a more convenient, more directly applicable form. But sometimes there are even more effective upgrading routes. One of these: through technical service.

There is probably no group of chemical sellers that stresses upgrading through service more than do the industrial cleaner makers. With them, solving a customer's problem is almost a fetish. To them, a customer's emergency becomes their own crisis.

Take the recent case of Otto Jommersbach. As Oakite (New York City) technical service representative working out of Kansas City, he had been called in to supply a lubricant for a 300-ton gang punch, used to punch ½-in. holes in 3/16-in. steel plate.

Jommersbach recommended a mixture of Oakite soluble oil and water, a solution that had been formulated specially for such use by the Oakite research development laboratories. To a degree, the material did the job. Whereas a previous lubricant had permitted only two sets of holes to be punched between lubrications, the new mixture allowed 14 sets.

Technically, the lubricating job was done. But Jommersbach, believing that he and Oakite could render a much more effective service, was unhappy about the method. For one thing, he was convinced that, given the proper application method, the lubricant he recommended could greatly extend the three-day life of the punches.

After some searching, he devised a holder containing a cellulose sponge. The sponge, soaked with lubricant, was then positioned so that with each stroke of the press, the punches received a film of solution as they passed through: Result: punch-life increased about 400%, being usable for two weeks of steady work.

Ironically, while Jommersbach's persistence paid off in customer satisfac-

Speaking of Quality

IGEPAL® CO-630

Tops by itself!

...years of continuous research by the leading manufacturer ... eliminated in this superior 100% active in-... *tops in performance* because it is *tops* in ... these pure "plus" features:

- Water-White Appearance
- Noticeable Lack of Odor
- Non-Stratifying Liquid
- Sediment-Free

... one of a series of 8 Igepal CO brands that range from ... Igepal CO-630 to the extremely hydrophylic Igepal CO-880. ... been prepared giving complete technical data on this ... and formulations. Send for it today.

From Research to Reality

ANTARA® CHEMICALS

ANTARA gaf

A DIVISION OF GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET · NEW YORK 14, NEW YORK

... Boston · Providence · Philadelphia · Charlotte · Chattanooga · Chicago ... · San Francisco · IN CANADA: Chemical Developments of Canada, Limited, Montreal

ANTARA CHEMICALS . . . 435 Hudson Street, New York 14, N. Y.

Please send your booklet on Igepal CO Brands.

NAME_____

POSITION_____

COMPANY_____

ADDRESS_____

the new

PERMA KLEERS®...

a type for every purpose

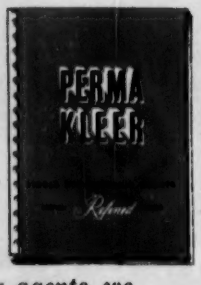
80
the all-purpose sequestering agent

SP
specific for iron

OH
specific for iron in caustic

these powerful *new* organic sequestrants are setting *new standards* in chelating

- **IRON**
- **CALCIUM**
- **MAGNESIUM**

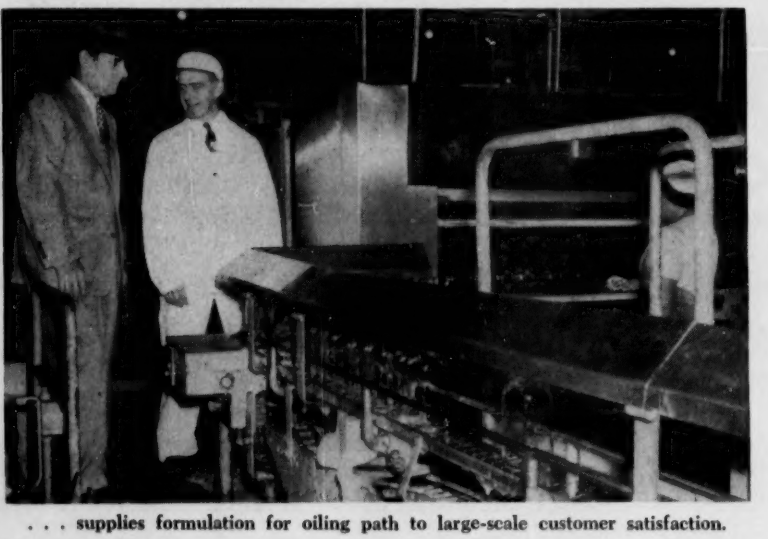


we also manufacture EDTA –in the name of PERMA-KLEER-50 . . . as specialists in the development of sequestering agents, we suggest you send for our latest revised booklet explaining testing methods and comparisons, pages 30-31-32 Make your own tests!

Refined **PRODUCTS**
CORPORATION
Manufacturing Chemists
630 SCHUYLER AVENUE
LYNDHURST • NEW JERSEY

Story begins on p. 42

SMALL-SCALE ingredients-testing of conveyor chain lubrication often . . .



. . . supplies formulation for oiling path to large-scale customer satisfaction.

tion, his punching operation idea cost him some commission money: the new setup required less lubricant than before.

Growth of a Salesman: Just how do salesmen "get that way?" Why should a man, as in this instance, go out of his way to render service that will cut his own commission?

The answer lies in the nature of the training behind industrial cleaning, metal conditioning and related selling.

Here's the gamut a new Oakite technical representative runs before he's considered fully indoctrinated:

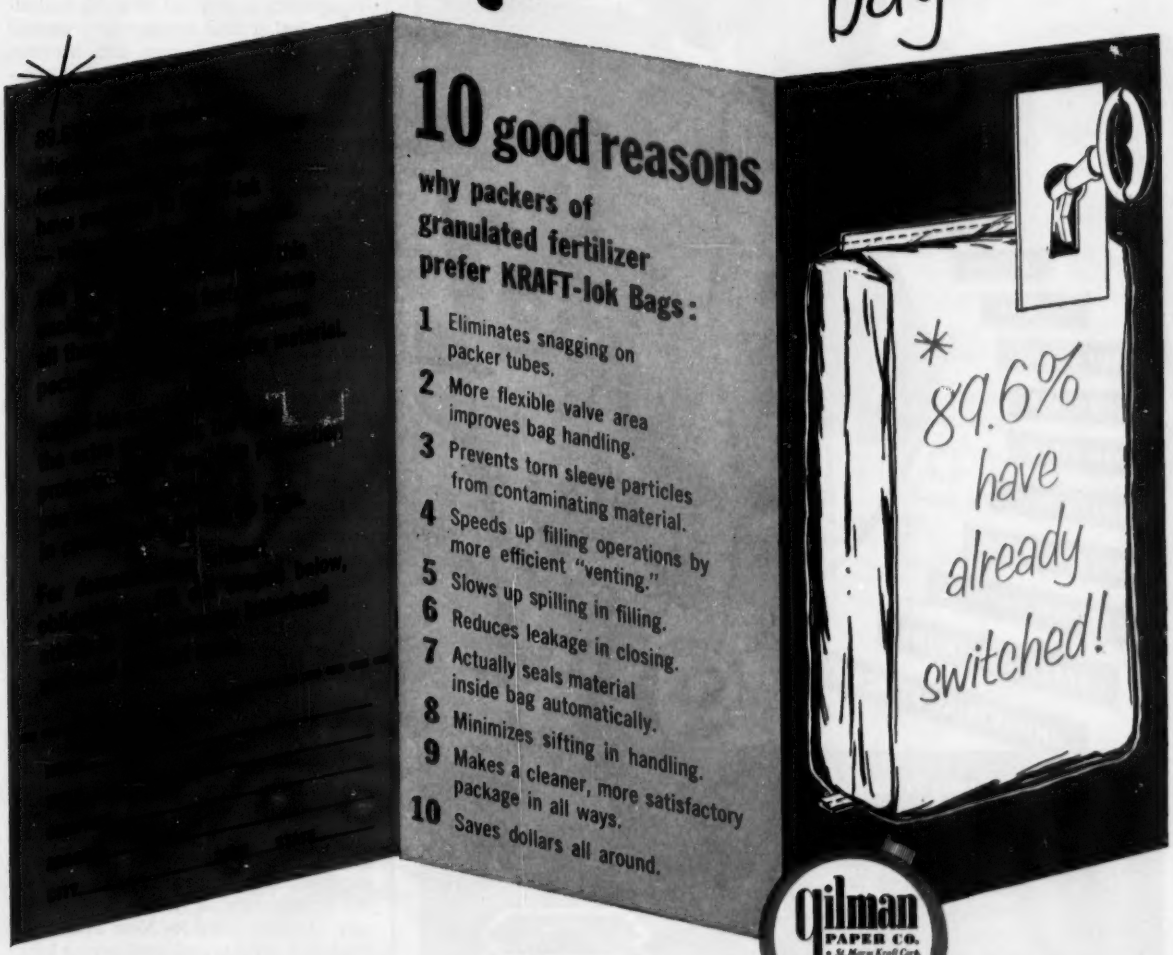
He spends five weeks at the New York company headquarters, cramming as much knowledge as he can absorb of common cleaning problems of 35,000 customers in the metalworking, railroad, dairy, food, petroleum, automotive and several other industries.

He's introduced to the workings of this double line of laboratory services:

- A long-range research development staff engaged in either anticipating or solving new problems posed by developing industries. The effect of such advances is apparent from an analysis of Oakite's sales figures: eight of its 20 top-selling materials have been developed during the past 10 years; and 68 products developed over that period now account for over 40% of the company's business.
- A shorter-range service laboratory. Here the salesman will send questions and samples from customers whose problems can be solved only

GOING GRANULAR?

switch to KRAFT-lok® bags!


10 good reasons
why packers of granulated fertilizer prefer KRAFT-lok Bags:
1 Eliminates snagging on packer tubes.
2 More flexible valve area improves bag handling.
3 Prevents torn sleeve particles from contaminating material.
4 Speeds up filling operations by more efficient "venting."
5 Slows up spilling in filling.
6 Reduces leakage in closing.
7 Actually seals material inside bag automatically.
8 Minimizes sifting in handling.
9 Makes a cleaner, more satisfactory package in all ways.
10 Saves dollars all around.
* 89.6% have already switched!

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Gummed Tape Div.
• The Cellucord Corp.
• Kraft Bag Corp.

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N.Y. • Daily News Bldg., Chicago 6, Ill.

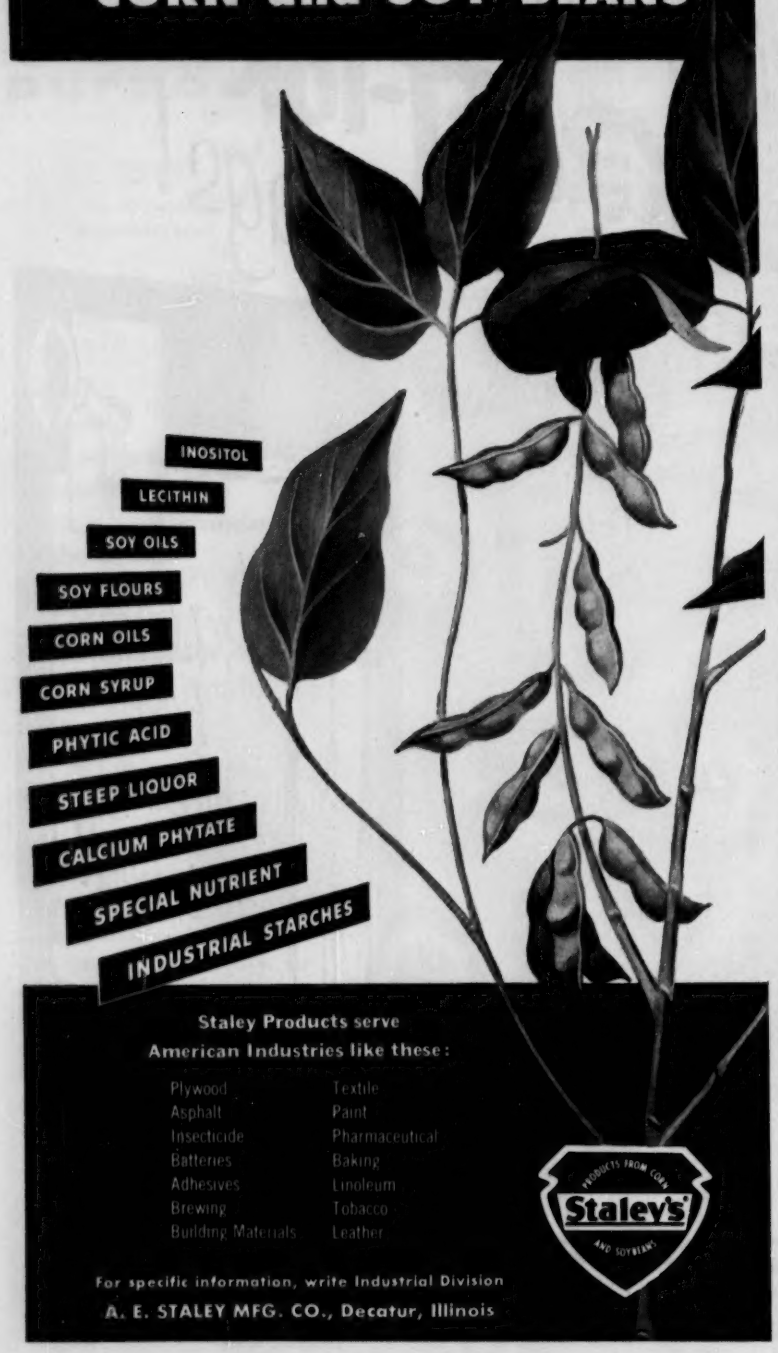
1 Responsibility
2 Integrated Plants
3 Generations of Bag Experience

Staley's

Industry's Most Dependable Source

For Products of

CORN and SOY BEANS



DISTRIBUTION. . . .

through testing on special equipment.

In addition, a properly indoctrinated sales representative will be impressed with the part the engineering shop plays in rendering service. Over the past few years, Oakite's engineering department has designed and fabricated some 30 different pieces of equipment for cleaning, metal conditioning and related operations to meet specific customer conditions. Examples: a solution-lifting steam gun, which combines detergent with steam to slash dirt off large surfaces; a hot spray unit for equipment cleaning in food, paper, and brewing industries. Latest piece: a rotating and revolving spray unit that will clean the entire interior of a milk tanker without anyone's entering it.

For the salesman, probably the most significant fact about these pieces of equipment is this: all of them including solution and temperature control instruments, lubricators and titration kits, are simply aids to sales. The company either issues them free on loan, rents them, or sells them at cost to customers. Oakite claims it does not compete with equipment manufacturers, supplies units only when they're not available elsewhere.

Car Service: Some time ago one wag characterized Oakite as a company that "renders a service—and sells a product on the side." The new representative has good reason to remember that. In the field, he's loaded with:

- Field information notebooks full of reports on every conceivable cleaning problem encountered by his predecessors and colleagues.
- A staggering pile of samples of each of 120 materials, a working model of the steam gun, other demonstrating material. It's said that when an Oakite man looks for a new car, his first consideration is the trunk and rear springs; they'll be carrying his stock in trade.

It's even possible that when he's convinced he can recommend a product but can't get the prospect to test it, he'll try to reproduce the prospective customer's problem in his own basement. Home laboratories are not unusual among the salesmen.

Payoff: How well does all this attention to service pay off? From outward indications—very well. Although company sales figures are not divulged, it's significant that only a few weeks ago, Oakite tripled its New York City chemical, service and engineering labs.

With 235 representatives throughout the country—up from 185 five years ago—obviously service is going to receive more emphasis than ever before. And considering past performance, that promises to be a fast pace.

2 NEW

Victor research chemicals now available in commercial quantities

Derived from the Benzene Phosphorus Chlorides, Victor Benzene Phosphonic Acid and Benzene Phosphinic Acid are offered for your evaluation. The interesting properties of these two new compounds indicate usefulness in several commercial applications. Upon investigation, you may find them of assistance in helping to make new compounds you are seeking. Write for your experimental samples today, on your company letterhead. Our technical staff will be pleased to work with you.

BENZENE PHOSPHONIC ACID

(Phenylphosphonic Acid)

($C_6H_5PO(OH)_2$)

W. M. 158 Sp. G. 1.475 (4° C.)
M. p. 158° C. Colorless crystals
Strong dibasic acid; $pk_1 = 1.85$; $pk_2 = 7.2$
Soluble in water, alcohol, ether, and acetone
Insoluble in benzene, hexane and carbontetrachloride
Stable in air. Decomposes at 275° C. with formation of benzene
Forms metallic salts
Solubility in water at 25.5° C.: 40.3 gm/100 gm water

Suggested uses are for non-food applications, such as:

Solid acid, intermediate for forming metallic salts used as anti-fouling agents in paints, catalyst for urea formaldehyde and related resins.

BENZENE PHOSPHINIC ACID

(Phenylphosphinic Acid)

($C_6H_5PHO(OH)$)

M. W. 142 M. p. 82-84° C.
Sp. G. 1.376 (29° C.)
Strong monobasic acid; $pk = 1.47$
Colorless crystals
Soluble in water, alcohol, and acetone
Slightly soluble in ether
Stable in air. Decomposes at 200° C.
Slight characteristic phosphine odor
Forms metallic salts
Oxidizes to the phosphonic acid with ordinary oxidizing agents such as hydrogen peroxide and nitric acid.
Solubility in water at 25.5° C.: 7.7 gm/100 gm water

Suggested uses are for non-food applications, such as:

General Anti-oxidant
To improve film properties of cured polysiloxane resins
Accelerator for organic peroxide catalysts

VICTOR
Dependable Name in Chemicals for 57 Years

VICTOR CHEMICAL WORKS
155 N. Wacker Drive, Chicago 6, Illinois

MAIL THIS COUPON FOR EXPERIMENTAL SAMPLES

Please Check for Samples

☐ Benzene Phosphonic Acid
☐ Benzene Phosphinic Acid

Name_____ Position_____

Company_____

Address_____

City_____ Zone____ State_____

(Clip to your company letterhead)

BAKER'S FEUCHTER: PA turnover and sales crediting—managerial problems.

Nuisance Abatement

Work enough it would be for the average chemical sales manager to concern himself with only the big problems—like maintaining a top-drawer sales force, sales forecasting, or shaping out the budget. But for all these prime-attention functions, there's always a host of secondary demands on the executive's time. Come what may, important or merely nuisance, these problems have to be solved.

Like most sales managers, J. T. Baker's New York district head, Harold Feuchter, has a normal complement of secondary tasks. Topping the list:

- Determining customer purchase policy.
- Discovering who's who in the accounts purchasing department.
- Allocating sales credit when more than one office contributes to a sale.

But unlike some, he has minimized their difficulty by devising a system to cope with them.

Of these problems, Feuchter views knowledge of a customer's buying policy as among the more important. With some companies centralizing, others decentralizing purchasing, the entire procurement situation now appears in constant flux. And, he observes, purchasing agents themselves seem to be turning over at a furious clip. His guess: perhaps as high as 50% now. The move to merger in chemicals, he feels, is a prime contributor to this state of affairs.

Causes aside, purchasing changes make difficulties for the sales team. A salesman can spend hours with an agent only to discover another has buying authority for the particular products. With centralized purchasing setups, for example, time spent with plant representatives might better be allocated to the main office. Too often the "who buys what" in a purchasing department has to be dragged out the hard way—through wasted calls. And, changes can wreck the effectiveness of sample sending and direct-mail promotion.

Study of the customer's purchasing methods is his solution. Such an approach helps sales management stay abreast of buying variations. The method used is elementary; procurement procedures are unearthed merely by querying the accounts themselves.

Generally, Feuchter picks up the data from subordinate purchasing personnel, sometimes from the top-level management. Specific calls, trade association meetings, and occasionally company publications furnish the information. These are the questions posed:

- Is it your function here to buy for contract?
- For spot purchases, say for one plant without requirements in common with others, do you buy for it?
- What is the policy on purchase orders? Do you or the plant handle them?
- What invoicing policy* is followed? Are they submitted to the factory of destination or to general purchasing?
- How are your purchasing functions specialized; i.e., who buys what for whom?

Now and then it happens that customers have to be "sold" on supplying this information. For these, Feuchter can point to advantages gained by the customer when his supplier knows the buying ropes:

- Purchasing agents are besieged by salesmen all day. When the caller knows whom to see and what he can buy, valuable time of the agent is often saved.
- Service is speeded. Invoice handling for instance, goes automatically to the correct destination.
- Intangible benefits result also. The salesman knows the right sales approach to use (saving time, perhaps introducing an advantageous product); and there is better communication when each knows the other as a specialist.

Once gleaned, the knowledge is recorded on a master account-report, which is available to all sales managers. Typical report summary:

- "... if divisions have a common requirement, a contract will be negotiated by ————————. Purchasing against it will then be delegated back to the division plants."
- "Major spots are made by the divisional agent, or if by plant, subject to N.Y. approval. Lesser spots, probably by the plants."

Rounding out the purchasing data is background information on the company. Often obtained from company reports, literature, or from sales calls, it outlines the customer's manufactures, industries served, and his product end use pattern. From it all, sales coverage suggestions are deduced, logged for future use. Sample suggestions:

- "Because of decentralization, there should be opportunity for other field men (in bulk as well as reagent). The two catalyst plants should bear close observation."
- "By the year's end, all plants will have purchasing facilities. Field men

* An analysis of report invoicing information showed that for 45 national accounts with purchasing centralized in New York, 71% (560 plants) had invoices sent to plant of destination, 22% (61 plants) requested invoicing to the general purchasing department in N. Y., for 7% (33 plants) information was unavailable.

Only a thorough evaluation can give you the full scope of the Pluronics' benefits. Pictured here is a test to determine the cloud point of nonionic surfactants, and a check on the melting point of Pluronic F-68 . . . first 100%-active nonionic commercially available in flake, powder or solid form.

Report on Wyandotte Pluronics*

What's new about the Pluronics?

The Pluronics are a new series of 100%-active nonionic surface-active agents, based on a chemical concept not previously used in the synthesis of nonionic surfactants. They provide an over-all balance of desirable properties: ease of formulation, stability, controlled sudsing, a range of surface-active properties, low hygroscopicity, dedusting properties, and a low order of toxicity.

The unusual flexibility of the Pluronics make them especially interesting . . . it is possible to prepare a Pluronic to meet any requirement of molecular weight or hydrophilic-hydrophobic balance, within the established range.

What's different about them?

The Pluronics are the first commercial example of a block-polymer-type surface-active agent . . . made from a hydrophobic polyoxypropylene base with hydrophilic polyoxyethylene groups attached to either end. This use of polyoxypropylene as the hydrophobic portion of the molecule is unique, the secret being to build a polyoxypropylene chain long enough to be water insoluble. The hydrophobic base may be varied in molecular weight, and any percentage of the hydrophilic groups can be added. The Pluronics range in molecular weight from 1800 to 8000. This compares with the usual range in molecular weight for surface-active agents of from 300 to 700.

(CONTINUED ON NEXT PAGE)

*REG. U.S. PAT. OFF.

What about formulating?

Pluronics are easy to formulate . . . you can choose from liquid, paste, flake, powder or solid-cast. Liquid Pluronics can be spray-blended by special spray systems, an ordinary sprinkling can, or nail-punctured drums suspended above mixing apparatus. Pluronics blend easily with common builders; permit you to compound a quality product using only solid materials.

Where are Pluronics used?

The Pluronics are already in commercial use in water conditioning, in the manufacture of viscose rayon and cellophane, in dye leveling, shampoos, boiler-water compounds, mechanical-dishwashing compounds, home and laundry detergents, and in metal-cleaning formulations. Promising new applications are being reported continually. The Pluronics have a wide range of characteristics. For example, L62 is a good wetting agent . . . F68 is an excellent dispersing agent . . . L64 combines a balance of wetting, dispersing and emulsifying characteristics that make it exceptionally effective as a detergent. These characteristics give the Pluronics unique advantages over other surface-active agents. They merit your full and careful evaluation. Brief summaries of a few of their uses are given here.

★ ★ ★

Flexibility of Pluronics helpful in metal cleaning

The field of metal cleaning is unusually complex, due to the many variables in the type of cleaning, the types of metals to be cleaned, types of soil to be removed, and the processing that metals are to receive after cleaning. Most metal-cleaning operations, therefore, require a cleaning compound designed to fit the particular process.

The Pluronics have proved especially valuable in metal-cleaning formulations for a number of reasons. Most important, perhaps, is their exceptional flexibility. With the Pluronics, you can tailor the product to meet your precise needs.

The Pluronics are stable and effective over the entire range of pH, in both acid and alkaline solutions. The suds range of the Pluronics is wide – from no foam to moderate foam. You can choose a Pluronic, or combination of the Pluronics, with the exact sudsing characteristics you require. Another important benefit: in electrocleaning, the controlled sudsing properties of the Pluronics preclude excessive hydrogen entrapment and reduce explosion hazards.

Test the Pluronics thoroughly . . . use the coupon for more information.

The Pluronics control suds in laundry detergents

Large-scale makers of laundry detergents have recently introduced compounds containing one or more of the Pluronics. Why? Because they found that the Pluronics, with their over-all balance of desirable properties, are the most versatile agents of their type available today.

Some of these properties are: controlled sudsing, ease of formulation, stability in solution, compatibility with a wide variety of materials, high detergency, and *permanent* dedusting effect with no moisture pickup.

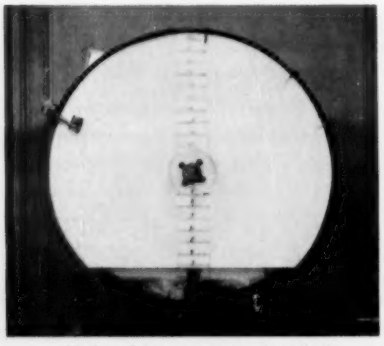
Pluronics' inherent flexibility makes it easy to formulate compounds with optimum characteristics. Suds level, carbon soil removal and whiteness retention can be varied easily to suit particular requirements.

Perhaps the Pluronics could give your product the same market advantage. Why not investigate today?

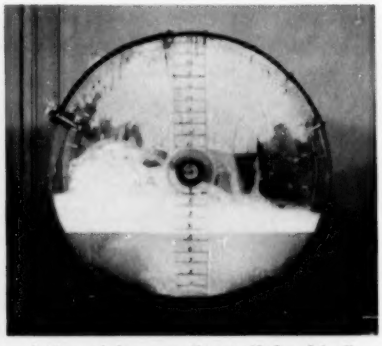
Pluronics important in water treatment

Commercial usage by major producers of boiler-water compounds has proved the Pluronics to be one of the most valuable recent developments in the industry.

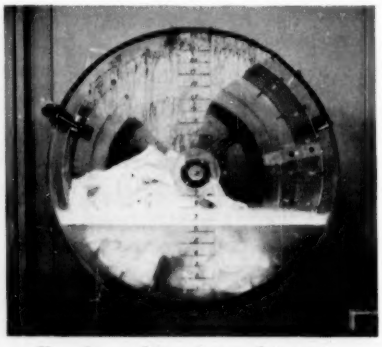
Compare suds levels of home detergents



High-sudsing property of typical popular detergent.



Action of low- or "controlled-sudsing" popular detergent.



Very low sudsing of new detergent containing Pluronics.

There are two main reasons for this: 1) their foam depressing characteristics, and 2) their exceptionally effective dispersing power for calcium and magnesium salts. Other properties of the Pluronics that have proved beneficial in boiler-water treatment, as well as in some water-conditioning applications, are: their compatibility and stability with acid or alkali solutions over a wide temperature range, and their unusually low order of toxicity.

Are these *your* requirements for a surface-active agent? . . . for more information, use coupon below.

Pluronics improve mechanical-dishwashing compounds

Nowhere have the Pluronics played a more dramatic role than in the mechanical-dishwashing field. Here they found an almost immediate acceptance, due to their unique combination of desirable properties. The most important are:

1. An ability to eliminate staining and streaking usually caused by improper rinsing.
2. Exceptional low-foaming properties.
3. Better, more permanent dedusting effect than other surface-active agents.
4. No increase in the hygroscopicity of the compound.

No other single nonionic surfactant can duplicate this unique combination of desirable properties. Formulators using the Pluronics in their mechanical-dishwashing compounds have a distinct product advantage — a product advantage that pays off in a distinct sales advantage.

If you manufacture mechanical-dishwashing products, you should investigate the Pluronics thoroughly . . . use coupon below for further information.

What about stability?

The Pluronics are stable in both acid and alkaline solutions, even at elevated temperatures. Moreover, their surface-active properties remain relatively constant over the entire range of pH. Since the Pluronics are not precipitated by calcium or magnesium ions, their detergency performance in formulated products remains relatively uniform, regardless of the water hardness.

What about sudsing?

The Pluronics series offers a wide range of foaming properties, enabling you to choose a particular Pluronic with exactly the sudsing characteristics you require. Pluronics L61 and L62 are essentially nonfoaming, generating less foam than any other commercially available surfactant.

Pluronics L64 and L68 generate moderate foams, making them particularly useful in those applications where foam is desirable.

Pluronic L61 can be used effectively to depress the foam of any of the other Pluronics.

What about dispersing power?

Pluronic F68 and Pluronic L64 are exceptionally effective dispersing agents for calcium and magnesium salts. The Pluronics, by keeping these inorganic salts in suspension, reduce the amount of adherent hard water deposits in boilers and pipes when used in water-treating compounds. The use of the Pluronics also renders the scale that does precipitate softer and more easily removed, due to the Pluronics' rewetting effect.

(CONTINUED ON NEXT PAGE)

FIRST CLASS
PERMIT NO. 1
(Sec. 34.9, P.L.&R.)
Wyandotte, Michigan

BUSINESS REPLY CARD
No postage stamp necessary if mailed in the United States

— 4¢ POSTAGE WILL BE PAID BY —

Wyandotte Chemicals Corporation
Attention: Advertising Dept.
Wyandotte, Michigan

What about rinsability?

The Pluronics provide maximum effectiveness as rinsing agents, in proportions as low as 2%. Laboratory evaluations, field tests and established commercial usage have shown the Pluronics to be superior in the promotion of free-rinsing — especially valuable in the mechanical-dishwashing field.

Staining and streaking due to improper rinsing have been decreased by as much as 90% by the inclusion of a very small amount of the Pluronics in mechanical-dishwashing compounds.

What about dedusting?

The dedusting effect of the Pluronics is much more permanent than that of many other surface-active agents, yet products incorporating the Pluronics remain free-flowing.

The liquid Pluronics, even at concentrations as low as 0.5% by dry weight of the formulation, are effective dedusting agents. They dedust not only during the compounding operations themselves, but also the finished product.

Compounders report that many dedusting agents lose their effectiveness after a period of time, whereas the use of half as much Pluronics gives effective permanent dedusting. This superiority is believed to be due to the much higher molecular weight of the Pluronics. They have no tendency to migrate.

What about hygroscopicity?

One of the problems of using anionic surface-active agents is the rapid increase of hygroscopicity in proportion to active-agent content. This hygroscopicity is also quite apparent in many of the nonionics.

An unusual feature of the Pluronics is their low order of hygroscopicity. Not only are the Pluronics relatively nonhygroscopic themselves, but they actually decrease the hygroscopicity of other components of formulations in which they are used.

For samples and more information . . .

The Pluronics make it easy to formulate products with optimum characteristics, products that are completely dust-free, non-caking, and exceptionally free-flowing, products with distinct advantages over competition. Evaluate them as a basis for an entirely new approach in formulating . . . the Pluronics may be the key to compounding concepts that open up new avenues of progress for your company. *But only a thorough evaluation can give you the full scope of the Pluronics' benefits.* For samples of the Pluronics, data sheets summarizing their physical and surface-active properties, and other technical and price information — call your Wyandotte representative or mail the coupon today. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte
CHEMICALS

HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Muriatic Acid • Calcium Carbonate • Calcium Chloride • Glycols • Chlorinated Solvents • Synthetic Detergents • Agricultural Insecticides • Other Organic and Inorganic Chemicals

MAIL THIS SELF-ADDRESSED POST CARD FOR DATA AND SAMPLES.

Wyandotte Chemicals Corporation, Wyandotte, Michigan

Please send:

- ☐ Data on the use of Pluronics in metal-cleaning formulations
- ☐ Samples of Pluronics L61, 62, 64, F68 for metal-cleaning products
- ☐ Data on the use of Pluronics in home and commercial laundry detergents
- ☐ Samples of Pluronics L44, 61, 62, 64, P75, F68 for laundry detergents
- ☐ Data on the use of Pluronics in water-treating applications
- ☐ Samples of Pluronics L61, 64, F68 for water-conditioning compounds
- ☐ Data on the use of Pluronics in mechanical-dishwashing compounds
- ☐ Samples of Pluronics L61, 62, F68 for dishwashing products
- ☐ Have a Wyandotte representative call on me.
- ☐ Data on Pluronics for_____

_____

_____

_____application

Name_____

Firm_____ Title_____

Address_____

City_____ State_____

should watch for their installation and names of men assuming such duties should be promptly transmitted to build our mailing list. And importantly, inquiries and developments that could influence policy at N.Y. headquarters for eventual contract should be cleared through to N.Y. for follow-up."

The procurement outline, plants and products, and other background data in the "book" serve well. Manager Feuchter visualizes five advantages:

- The report provides an effective medium for keeping sales offices informed.
- Up-dated periodically, it forces complete evaluation of the account.
- Sales forecasting is assisted; market information capsulized.
- Waste of promotional material is pared.
- A complete record of purchasing personnel is available.

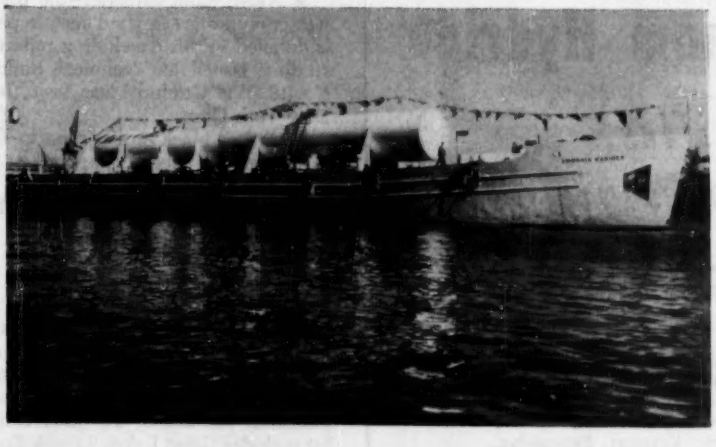
Sales Credit: Major secondary sales management problems don't end, however, with purchasing policy and a master report. For, as others have found, there is always the question of dividing the sales credit when more than one office assists a sale. And, avers Feuchter, "it's a real problem."

Any way the job is considered, it's complicated. But Baker has a checklist (worked out by company executives), which guides the allocation. Where multiple action figures in, the sales effort is considered from six points:

- Did the office initiate or cooperate on the order?
- Which office solicited the sale?
- Where was the sale negotiated?
- Which office received the purchase order?
- Was it a contract purchase?
- If trouble shooting was necessary, who did it?

Using these criteria, the sales managers determine who gets what credit. But other than these formal guide posts, there is no formulization of the process. The sales manager just has to reason it out.

What profit does the credit-evaluation criteria bring the firm? According to Feuchter, it assists an equitable



'Ammonia Mariner' Ahoy

BEDECKED with launching pennons, the largest anhydrous ammonia barge ever fabricated floats moored to its pier, awaiting finishing touches. It's another example of the running tide to chemical water transport.

The ship-nosed-bow barge measures 252 ft. fore to aft, has a beam of 48 ft. Some 1700 tons of anhydrous ammonia can be carried in seven hold and two deck tanks.

Built for Shell Chemical by Bethlehem Steel's Beaumont, Tex., yards, the *Ammonia Mariner* is destined for service between Shell's Pittsburg, Calif., plant and its new storage terminal at Portland, Ore., 700 miles away. Round-trip time: 10-12 days.

On its maiden voyage, the *Ammonia Mariner* will take along three extra ammonia tanks. These will be used on a smaller barge that will ply the Columbia River to Pasco, Wash.

SS MARINE CHEMIST
ONE OF MARINE TRANSPORT LINES
SPECIAL CHEMICAL CARRIERS

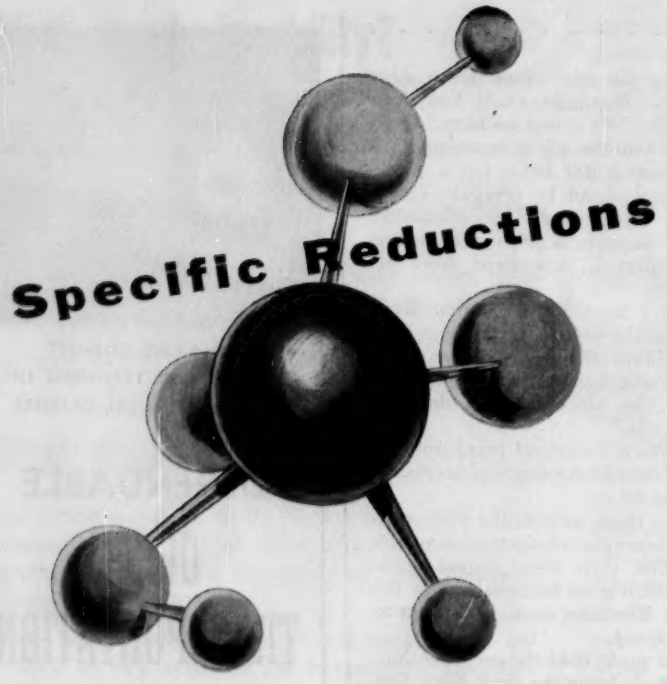
DEPENDABLE
OCEAN
TRANSPORTATION

WE ARE
SPECIALISTS

Our experience enables us to provide economical and dependable ocean transportation of your bulk liquid or dry chemicals, with particular attention to maintenance of product purity to most exacting specifications.

YOUR INQUIRIES WILL BE ANSWERED PROMPTLY AND CONFIDENTIALLY

MARINE
TRANSPORT
LINES, INC.
11 Broadway New York 4, N.Y.



for functional groups

Lithium Aluminum Hydride

speeds, simplifies, increases yields

Under atmospheric pressures — at room temperatures, LAH reduces functional groups swiftly and easily without danger of undesirable side reactions. In ether solutions or slurries, LAH assures high, profitable reductions. For example:

Lithium Aluminum Hydride reduces . . .

To Alcohols Aldehydes, Acid Chlorides, Esters, Carboxylic Acids, Ketones, Expoxides.

To Amines Amides, Nitriles, Anils, Nitro (aliphatic).

To Azo Compounds Azoxy, Nitroso, Nitro (aryl).

To Thioethers Sulfoxides.

To Thiols Sulfonyl Chlorides, Disulfides.

A call or letter will bring complete information without obligation. Do it now!

Pioneers In Hydrogen Compounds

M H **Metal Hydrides** INCORPORATED

22 Congress St., Beverly, Mass.

DISTRIBUTION. . . .

split. And that adds all important selling incentive, hikes morale—both vital to any sales force.

Secondary problems will probably beset chemical sales managers as long there's an industry. But the solving is worth the effort.

•

For Your Reference: Rare chemicals list—new leaflet includes almost 300 special chemical compounds for research and production use. City Chemical Corp., New York City.

• Catalyst carriers—just issued 4-page folder describes properties of Celite diatomite materials useful for catalyst support. Johns-Manville, New York City.

• DDS—technical bulletin No. O-118 describes specifications and chemical reactions of now commercially available dihydroxydiphenyl sulfone. Suggested uses and bibliography are included. Monsanto Chemical Co., St. Louis, Mo.

• Alkyl halides—alkyl chlorides of chain lengths C-14, -16, and -18 together with alkyl bromides of C-10, -12, -14, -16, and -18 are the subjects of recently issued bulletin. Aceto Chemical Co., Inc., Flushing, N.Y.

• Alkyd paint extender—the use of wet ground mica in vinyl acetate paint is detailed in this concluding report of studies. Issued as Technical Bulletin No. 19. Wet Ground Mica Assn., Inc., New York City.

• Carbon black service reports—first in a series of bulletins supplements recent book "Columbian Carbons in Natural and Synthetic Rubbers." Report No. 1 covers work done on heavy-duty truck tires. Binney & Smith, Inc., New York City.

•

Sales Moves: The Alpha Corp. (Stamford, Conn.) has formed a national dealer organization to handle the sale and distribution of its Molycote line of industrial lubricants. To date, dealer list includes Great Lakes Sales & Engineering (Chicago, Buffalo and Rochester); Larry Hammond (Milwaukee); Edco Sales (Upper Darby, Pa.); Haskel Seals (Glendale, Calif.); Haskel Engineering & Supply (San Francisco); M. F. Read (Detroit); H. F. Soderling (Seattle); Stevenson Oil & Chemical (Wickliffe, O.). Further dealer appointments will continue.

• D&R Pilot Plants, Inc. (Hazardville, Conn.) will be Eastern selling and servicing agent for Polyfluoron, Acme Resin Corp.'s (Forest Park, Ill.) newest member of fluorocarbon polymer family.

• Chemical By-Products, Ltd. (Toronto) has been named Canadian contract filler and sales agent for Bradley

The Petro plant at Tuscola, Illinois was planned for the most efficient production possible. These factors were considered carefully:

RAW MATERIALS... natural gas is taken directly from the Panhandle Eastern pipe line compressor station at Tuscola for further processing.
FLOW OF MATERIALS . . . every production process is integrated. For example, while the main product of the ethylene unit feeds the ethyl chloride, ethyl alcohol and polyethylene plants, by-product hydrogen flows to ammonia manufacture, and also to the chloride process. The sulfuric acid plant not only supplies the fertilizer market, but also the alcohol unit.
TRANSPORTATION . . . three railroads and two main highways converge at Tuscola for ease in transporting materials.
PRODUCTION AND QUALITY CONTROL . . . extensive laboratories staffed with specialized research, development and control personnel keep pace with the latest process and product improvements, and insure uniformly fine products.

Add this production unit to your facilities. Our engineers will be glad to discuss your long term bulk requirements for chemicals from Petro.

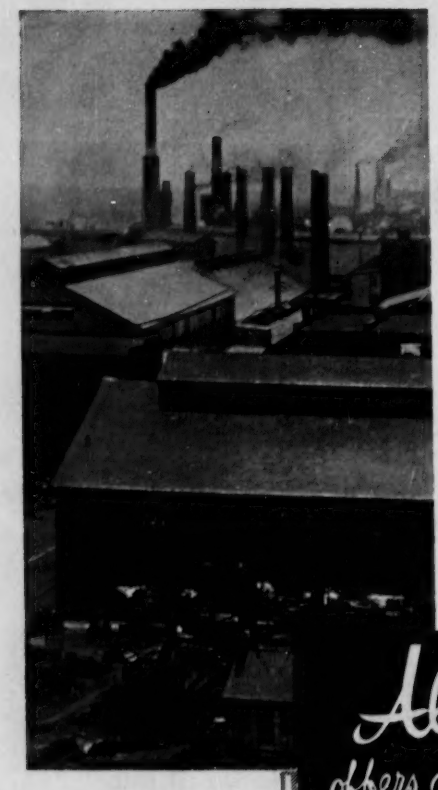
* *Ethyl Chloride • Ethyl Alcohol • LP Gas • Polyethylene • Ammonia • Sulfuric Acid*

NATIONAL PETRO-CHEMICALS

CORPORATION

A joint enterprise of National Distillers Products Corporation and Panhandle Eastern Pipeline Company

99 PARK AVENUE, NEW YORK 16, N. Y.



Minimize YOUR Industrial Malodors!

Alamask offers olfactory relief to all factories ...industrial reodorization!

If *your* industry or product is one distressingly burdened with an identifying obnoxious odor, let an ALAMASK® provide effective relief.

Product Reodorization – **ALAMASK product reodorization means the addition of an odorant to an industrial product to improve its odor, to lessen its malodor, or to add identification to the product.**

Odor Abatement – **Odor abatement with an ALAMASK means the masking of all kinds of industrial malodors, at the source. There are over 40 ALAMASKS, each specifically formulated to deal with a special odor problem in a huge variety of industries.**

Whether your problem is a plant malodor or a product malodor, our experienced chemists and chemical engineers can help you.

For technical assistance and for complete information on ALAMASK industrial reodorants, write today to Industrial Reodorants ("Alamask") Division, Rhodia, Inc., 230 Park Avenue, New York 17, N. Y.

Rhodia INC.

DISTRIBUTION. . . .

Container Corp. (*CW, Oct. 23 p. 107*), maker of plastic collapsible tubes and "squeeze" bottles.

•

Packaging Progress: From Vienna, Austria, comes word that plywood barrels have been successfully made. Tests report that 50- and 100-liter barrels outlast usual oak containers, hold liquids better. For economy's sake, oak is used for only surface layers, inferior woods for inner plies. Phenol-formaldehyde resin glues staves together.

• Stephens-Adamson Mfg. Co. (Aurora, Ill.) offers its new Saco sectional bag conveyor. A heavy-duty flat belt conveyor, it's claimed to have advantages for handling bagged or boxed material.

• American Potash & Chemical Corp. has extended its container redesign activities to its Agricultural Chemicals Division. Coordinated by Al Swain and William Francis, the newest group of packages continues AP&C's "new look" program begun last April (*CW, June 5, p. 40*).

• Hudson Pulp and Paper Corp. is completely regrouping its multiwall sales force, according to Multiwall Sales Manager Julian Mendelsohn. Achieved through a reassignment of duties rather than a change of personnel, the move requires each salesman to concentrate his efforts in a single product division.

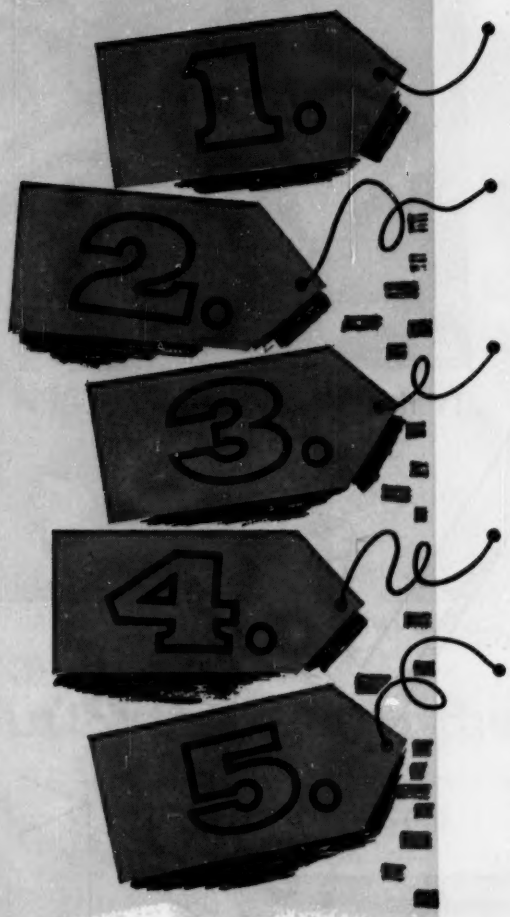
•

Deterioration Book: A new collaborative volume, "Deterioration of Materials–Causes and Preventive Techniques" has been prepared under the joint auspices of the Prevention of Deterioration Center, National Academy of Sciences (National Researeh Council) and the Services Technical Committee of the Dept. of Defense. Compiled by specialists and edited by Glenn Greathouse and Carl Wessel, this 835-page work, originally intended for military service use, is also aimed at manufacturers, shippers and transportation agencies, insurance carriers and others concerned with the naintenance of goods. Publisher: Reinhold, New York City. Price: $12.

•

Fuels Volume: Vol. II of the new form, 3-volume, Bureau of Mines Minerals Yearbook (1952) is now available. Devoted to the mineral fuels, Vol. II is the first part off the press. Vol. I, containing chapters on metallic and nonmetallic minerals, and Vol. III, dealing with geographic areas, will be published later. Obtain only from Supt. of Documents, U.S. Govt. Printing Office, Washington 25, D.C. Price (Vol. II): $2.25.

Do your present lacquer solvents meet these Ketone advantages...?



High purity . . . *at no extra cost.* You add the latent solvents *you* prefer.

Unsurpassed ease of formulation—for both nitrocellulose and vinyl types.

Gives solutions of exceptionally high solids content—or high diluent content, both aromatic and aliphatic.

Imparts excellent flow, blush resistance, high gloss.

Price advantage, too! Lower specific gravity favors *you* when you buy by the pound and sell by the gallon.

WRITE FOR THE COMPLETE STORY!

These five important advantages are yours when you use Shell Ketones. Lacquer solvent systems based on Ketones have so many inherent advantages they have become standard with the nation's foremost formulators of both nitrocellulose and vinyl lacquers.

The Shell "quality group" of solvents includes MEK, MIBK, MIBC and IPA . . . for maximum flexibility in formulating. Ask your Shell Chemical representative why Ketones are your best solvent buy.

SHELL CHEMICAL CORPORATION

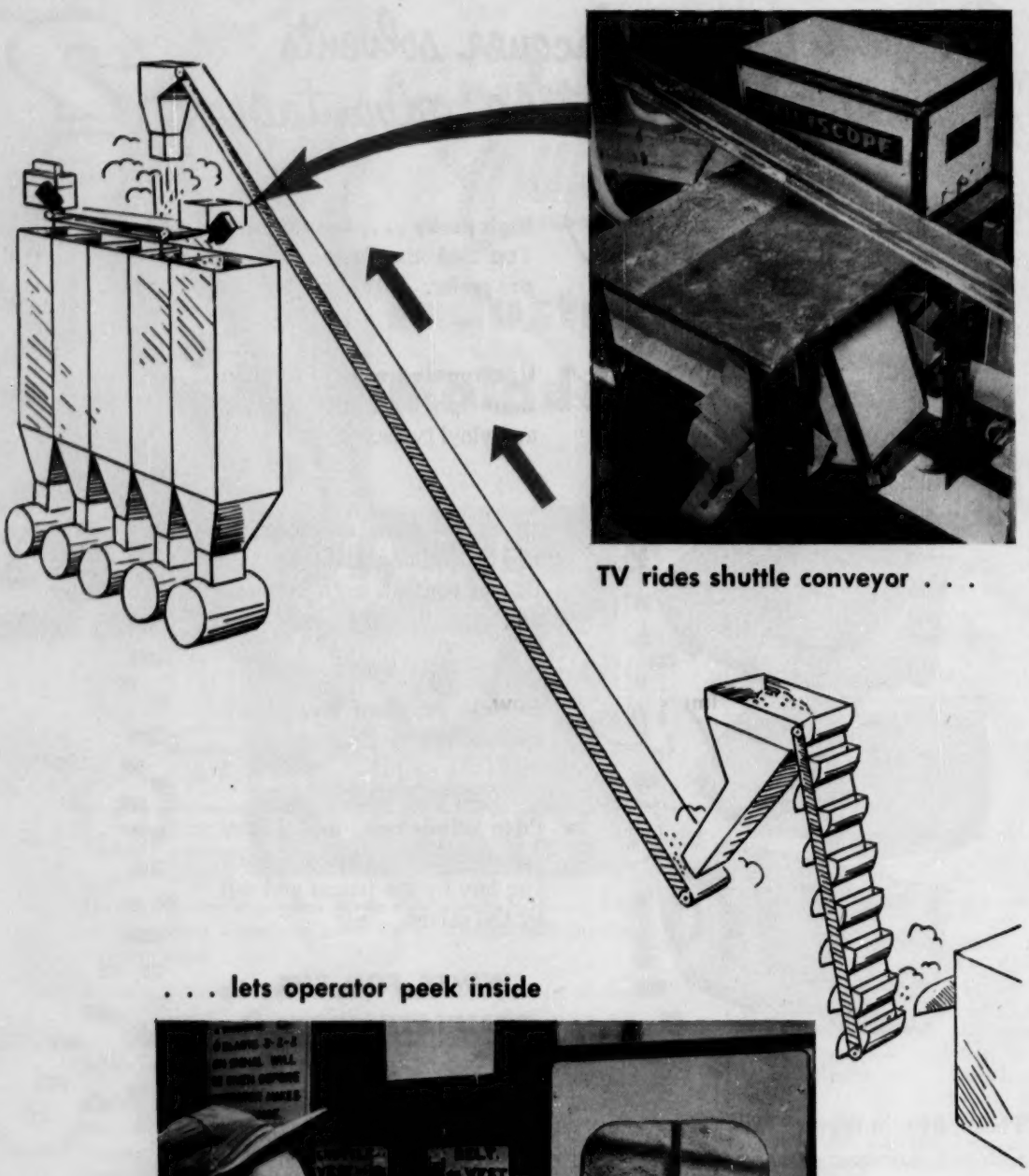
CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

380 Madison Avenue New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis

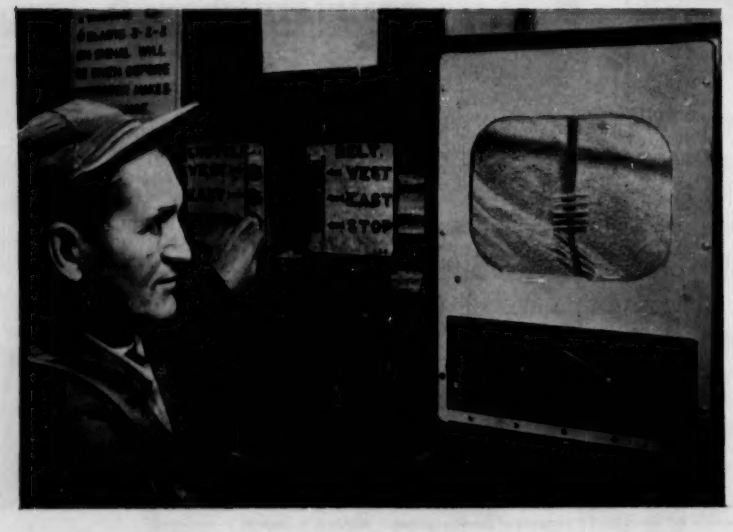
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

PRODUCTION . . . . . .



TV rides shuttle conveyor . . .

. . . lets operator peek inside



DEPTH PERCEPTION via 3-D TV aids robot handling of 'hot' materials at Argonne National Labs.

An Extra Eye in the Plant

HELP WANTED

Process observer to watch dirty, hazardous operations in inaccessible locations. Must be dependable, able to report information quickly, accurately. Poor working conditions, 24-hour day, low pay.

If you had to fill one of the many industrial jobs typified by such an unattractive offer, chances are that the only applicant would be industrial TV. This husky little brother of commercial television is ready to take on man-size jobs, anticipates a big future based on its proved ability to perform hitherto impossible tasks.

For one thing, industrial TV may virtually eliminate the harassed process supervisor's frequent complaint: "I can't be in two places at the same time." Borne by this electronic magic carpet, he can visit, via video, two or more widely separated locations, simultaneously or in rapid succession. And operators can keep constant watch over hazardous or otherwise inaccessible operations from the comparative safety and comfort of their remote control centers.

Extending Vision: Since it's a relatively new tool, industrial television has not yet been widely adopted by the process industries. But its impressive list of qualifications has found it gainful employment for several processing jobs. It is used, for instance:

- In power plants to monitor the level of water in huge boilers. Other remote indicating devices can do the same job, of course, but industrial television eliminates the danger resulting from the slight risk of failure inherent in any mechanical device. For while the camera, too, is subject to failure, when it does you get no picture at all. (Diamond Specialty reports that 80% of all the industrial television sets it has sold have gone to power plants.)
- In explosives processing and in plants handling radioactive materials to observe dangerous operations.
- In steel mills to observe slab positioning where an insulated camera can withstand temperatures that would be too hot for humans. Similarly, it might prove useful in observing high-temperature reactions in chemical plants.
- In plants and warehouses to spot the numbers on railroad cars and trucks entering or leaving the plant. And it's been used to check weighing operations.
- As an aid to surveillance in plant protection. It's also used to monitor smokestack emissions and in operations —such as strip mining—to help operators whose vision is obstructed.

One of the more recent applications of industrial television in the process industries is in the Columbia cement plant of Pittsburgh Plate Glass Co. at Zanesville, O. (*see opposite page*). With the ever-alert eye of the tele-

Problem

To produce more ammonia without excessive expansion of existing facilities.

Solution

GIRDLER helped solve this problem by developing two highly active catalysts, G-19 and G-3. Without sacrificing quality or enlarging the gas plant, the use of these two GIRDLER Catalysts on synthesis gas production resulted in:

75% more output

Girdler specializes in solving catalyst problems. Its knowhow is at *your* service.

FOR

Catalysts

WRITE...

The
GIRDLER
Company

A DIVISION OF
NATIONAL CYLINDER GAS COMPANY
Gas Processes Division
LOUISVILLE 1, KENTUCKY
NEW YORK • TULSA • SAN FRANCISCO

vision camera extending his vision, an operator controls the distribution of crushed limestone to five storage bins located 450 ft. away from his station at the crusher. Riding the shuttle conveyor, the camera picks out identifying bin markers, provides a picture of what's going on in each.

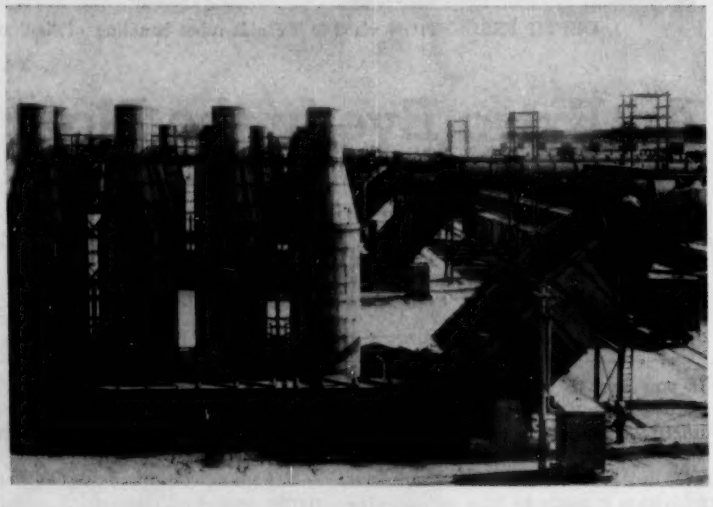
Before TV was on the job, a man was required to watch the filling operation, trip the loading chutes above the bins. Not only did TV eliminate the dust hazard to this worker, it also cut the labor cost in half by releasing him for more productive work, and afforded centralized control of the entire operation.

Of course, industrial TV isn't limited to taking over the duties of human observers. It can see into many places where men can't. Too, its small physical size permits the camera to enter restricted areas, such as pipes and vessels, which are not large enough to be equipped with manholes.

Special Duty: Early in the game, manufacturers realized that industrial requirements called for more than simply putting overalls on commercial studio equipment. Though basically similar to commercial TV, the industrial systems operate on a closed-circuit cable instead of transmitting video signals through the air to a receiving antenna. This meant that circuits could be simplified for less critical operation and ease of maintenance. Sensitivity and high resolution could be, and were, sacrificed to make cameras, monitors and power units that were compact, rugged enough to withstand rough usage, costing only 1/20 to 1/4 as much as comparable broadcast equipment. Some of the industrial systems now in use:

• Radio Corporation of America's (Camden, N.J.) model ITV-5 was the first designed by a major commercial manufacturer especially for industrial applications. It features a lightweight (7½ lb.) camera and combined monitor, power supply and control unit in a single portable case smaller than a table-model home TV receiver. About a year ago, RCA brought out another system with a more compact camera (5 lb.) than can utilize a home-type set as a monitor. Dubbed TV Eye, it's listed at less than $1000.

• Diamond Power Specialty Co. (Lancaster, O.) started from scratch in 1946, developed its Utiliscope to



Wood Tames Fluorides

PROVING THAT natural materials can still do battle with synthetics, California redwood licked corrosion in these new potline gas scrubbers of Kaiser Aluminum & Chemical Corp.'s (Spokane, Wash.) $5-million fume control system. Fluorides stripped from 158,000 cfm. of gas by 6400 gpm. of scrubbing water lower the pH to 3.0, proved too much for mastic- or synthetic rubber-coated metal.

Spencer Service is Wonderful

"You'd better take these, Tanky, they're rush orders!"

You'll start seeing this man shortly. He is the salesman for Poly-Eth, Spencer's brand of polyethylene, the new wonder plastic. Your Poly-Eth salesman is technically trained to discuss your problems and be ready to give you top service when Poly-Eth goes into production at Spencer's new polyethylene plant. Look for him.

SPENCER

America's Growing Name In Chemicals

SPENCER PRODUCTS: "Mr. N" Ammonium Nitrate Fertilizer • SPENSOL (Spencer Nitrogen Solutions) • Ammonia (Commercial and Refrigeration Grade) Aqua Ammonia • 83% Ammonium Nitrate Solution • Synthetic Methanol Formaldehyde • Hexamine • Polyethylene (1955) • FREZALL (Spencer Dry Ice) • Cylinder Ammonia

SPENCER CHEMICAL COMPANY

General Offices, Dwight Bldg., Kansas City, Mo. Works: Chicago, Ill., Pittsburg, Kan., Henderson, Ky., Vicksburg, Miss., and Orange, Texas (under construction.)

AMAZING NEW SOLVENT

☆ no fire hazard

☆ extremely low toxicity

☆ safe for all metals

☆ extra-high solvency

CHLOROTHENE

A product of Dow Chemical and certainly the finest cold cleaning solvent yet produced. Fully the equal of carbon tetrachloride in cleaning power and drying time yet no more toxic than the petroleum naphthas.* Completely nonflammable and safe for all metals, including aluminum, brass, magnesium.

* M. A. C. 500 ppm

FOR SAFER — FASTER — BETTER CLEANING

write or phone the nearest stock point.

THE SOLVENTS and CHEMICALS GROUP

2540 WEST FLOURNOY STREET, CHICAGO 12, ILLINOIS

AMSCO SOLVENTS & CHEMICALS CO.
CINCINNATI 29, 4619 Reading Road
MElrose 1910

BUFFALO SOLVENTS & CHEMICALS CORP.
BUFFALO—Box 73, Station B
Bedford 1572

CENTRAL SOLVENTS & CHEMICALS CO.
CHICAGO—2540 W. Flournoy St.
SEeley 3-0505

DIXIE SOLVENTS & CHEMICALS CO.
LOUISVILLE—Dixie Highway at Appleton Lane
ATwood 5828

HOOSIER SOLVENTS & CHEMICAL CORP.
FORT WAYNE 8, Nelson Rd. East
ANthony 0213

INDIANAPOLIS 22, 1650 Luett Ave.
MElrose 8-1361

MISSOURI SOLVENTS & CHEMICALS CO.
ST. LOUIS 7, 419 De Solo Ave.
GArfield 1-3495

OHIO SOLVENTS & CHEMICALS CO.
CLEVELAND 11, 3470 W. 140th St.
CLearwater 1-3770

SOUTHERN SOLVENTS & CHEMICALS CORP.
NEW ORLEANS—1354 Jefferson Highway,
P. O. Box 4067 Carrollton Station
Temple 4666

TEXAS SOLVENTS & CHEMICALS CO.
HOUSTON—8501 Market Street
Orchard 6683

WESTERN SOLVENTS & CHEMICALS CO.
DETROIT—6472 Selkirk Avenue
WAlnut 1-6350

WESTERN SOLVENTS & CHEMICALS CO.
TOLEDO—Central Avenue at Reynolds Rd.
Jordon 0761

WESTERN SOLVENTS & CHEMICALS (Can.) Ltd.
WINDSOR—1454 Crawford Street
Clearwater 2-0933

WISCONSIN SOLVENTS & CHEMICALS CORP.
MILWAUKEE—1719 South 83rd Street
GReenfield 6-2630

WOLVERINE SOLVENTS & CHEMICALS CO.
GRAND RAPIDS—1500 Century Ave., S.W.
Grand Rapids 5-9111

"see where you can't look." Primarily a manufacturer of water-level gauges and boiler accessories, Diamond, too, has a lightweight system in its recently developed series 400 UtiliVue. It has all controls and power supply built into the camera housing, can be viewed on either a video monitor or a standard TV receiver.

• Dumont has just brought out its first industrial TV equipment – the Tel-eye. Also self-contained for use with monitor or standard receivers, the Tel-eye camera offers remote focusing and lens changing. Dumont has also designed equipment for special uses–for example, a three-dimension TV viewer (*see cut*) used at the Argonne National Laboratories. This installation was devised to give the operator depth perception for the control of robot arms used in handling radioactive materials behind radiation-proof walls.

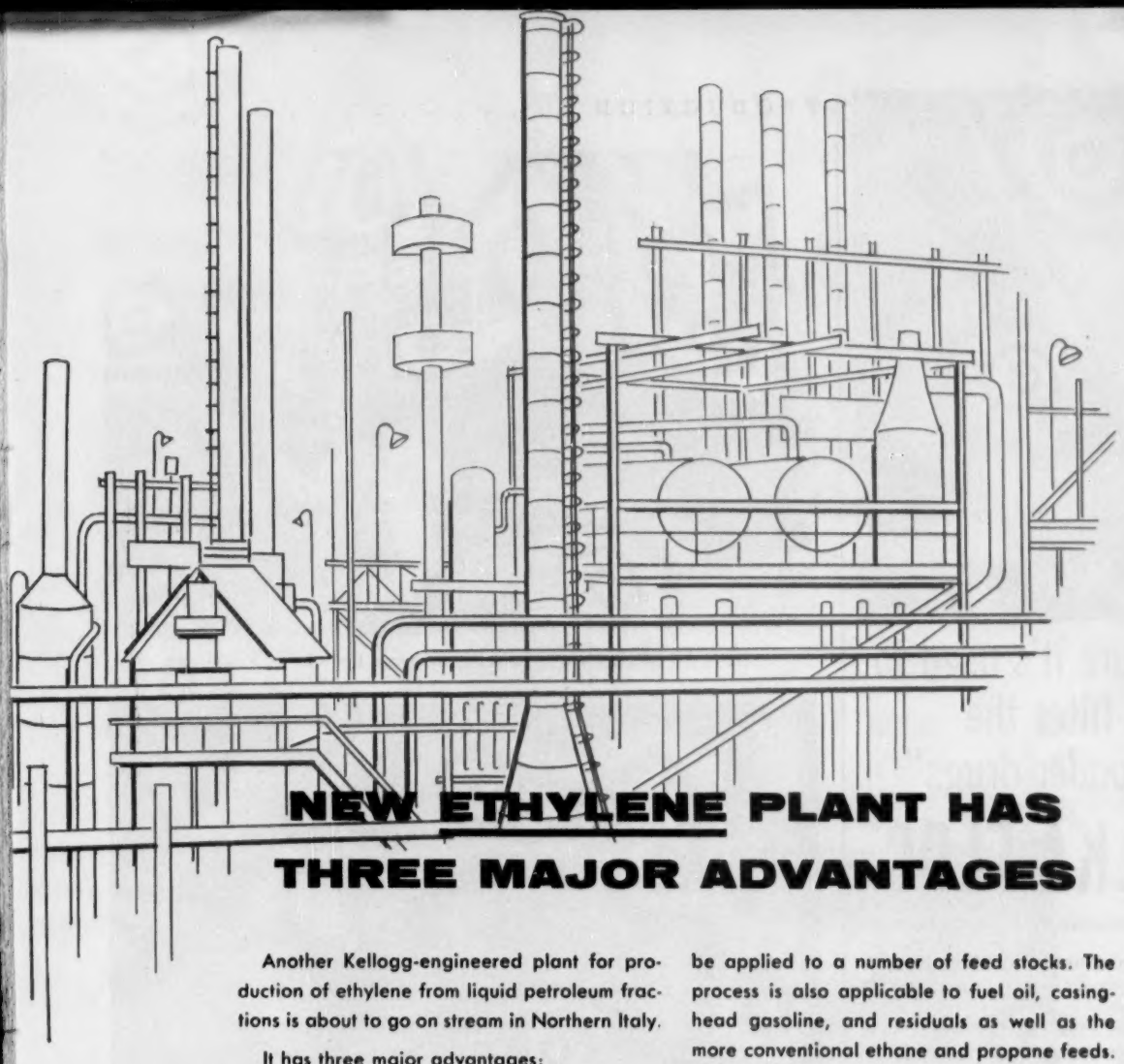
• General Electric Co. (Syracuse, N.Y.) has a quite different approach in its closed-circuit TV development. Instead of ordinary black-and-white TV, it has a color system. Using the field sequential method (spinning disk), it features a large-screen projection system suited to large viewing audiences. While there is little likelihood that this equipment will find wide application in run-of-the-mill operations, it is expected to be a useful means of communication.

Big Potential: Aside from the jobs that can't be done as well by any other means, there are many others that may turn to TV simply for convenience. In fact, proponents of this growing youngster predict its future growth will surpass that of commercial TV. Visual communications permitting two-way conversations, with facilities for viewing blueprints, charts or flow diagrams, would save countless steps in the daily routine of multiplant installations.

More Motor

General Electric took a portion of the wraps off its new thin-film, heat-resistant Alkanex wire insulator last week, although it won't be placed on full display until the January meeting of the American Institute of Electrical Engineers. Briefly, the new insulator is said to raise the limiting temperature for long-lived motors from about 225F to 300F, thereby exploiting the economics of higher operating temperatures.

Significance for the chemical industry: horsepower ratings may be upgraded by 25%, thus giving, in effect, more motor in less space.



NEW ETHYLENE PLANT HAS THREE MAJOR ADVANTAGES

Another Kellogg-engineered plant for production of ethylene from liquid petroleum fractions is about to go on stream in Northern Italy.

It has three major advantages:

1. **High olefin yields**
2. **High product purity**
3. **Flexible operation**

In this process, Kellogg's engineers applied the principle of high temperature pyrolysis of hydrocarbons in the presence of steam to petroleum fractions with a resultant increase in yields of desirable products and reduced coking.

While in this particular instance, the processing sequence involves the topping of crude petroleum and pyrolysis of the heavy naptha and gas oil cuts, the cracking operation can be applied to a number of feed stocks. The process is also applicable to fuel oil, casinghead gasoline, and residuals as well as the more conventional ethane and propane feeds.

Developments such as this are the goal of "Engineering for Tomorrow" . . . typical of Kellogg's continuous efforts to prove out new ways to better yields, bigger profits.

TYPICAL RECENT KELLOGG CHEMICAL PLANT CONTRACTS are in the fields of:

ethylene • polyethylene • phenol-from-cumene
anhydrous ammonia • methanol • phthalic anhydride
liquid fuels and chemicals synthesized from coal
glyceride purification • nitric acid
ammonium nitrate • ammonium sulfate

CHEMICAL PROCESS DIVISION

THE M. W. KELLOGG COMPANY

225 Broadway, New York 7, N. Y.

In Canada—**The Canadian Kellogg Company, Limited, at Toronto and Edmonton**

In Europe—**Kellogg International Corporation, at London**

SUBSIDIARIES OF PULLMAN INCORPORATED

KELLOGG

ETHYLENE PROPYLENE BUTYLENE

KELLOGG

METHANOL ETHANOL PROPANOL

KELLOGG

BUTANOL ISO-OCTYL ALCOHOL

KELLOGG

BENZENE XYLENE TOLUENE

KELLOGG

PHENOL FROM CUMENE

KELLOGG

AMMONIA UREA

KELLOGG

GLYCERIDES

KELLOGG

so pure it's used to filter the "wonder drugs"

SOLKA-FLOC®

99.5% Chemically Pure Cellulose

SOLKA-FLOC guarantees a clear, pure filtrate. Its finely-divided cellulose particles mesh and bond to form the perfect filter barrier. That's just one of many reasons why producers of antibiotics use SOLKA-FLOC as a filter aid.

It can be handled readily with a knife, will not gouge . . . gives a more stable cake, will not bleed . . . gives longer life to the precoat . . . is chemically inert, easily washable . . . can be burned to recover any valuable solids remaining.

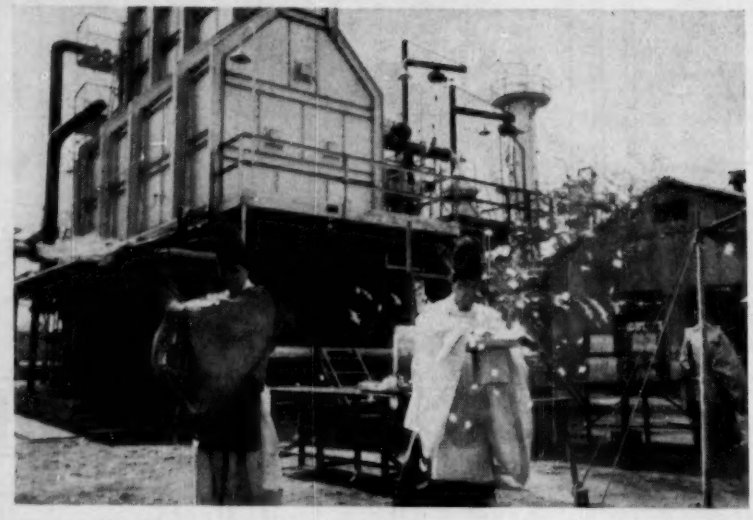
SOLKA-FLOC offers you a wide range of grades, enabling you to obtain any desired combination of flow rates and efficiency of filtration. Whatever you filter, it may be just what you need to solve your filter problems.

Write to our Technical Service Department CF-12, in Boston, describing your problem in detail.

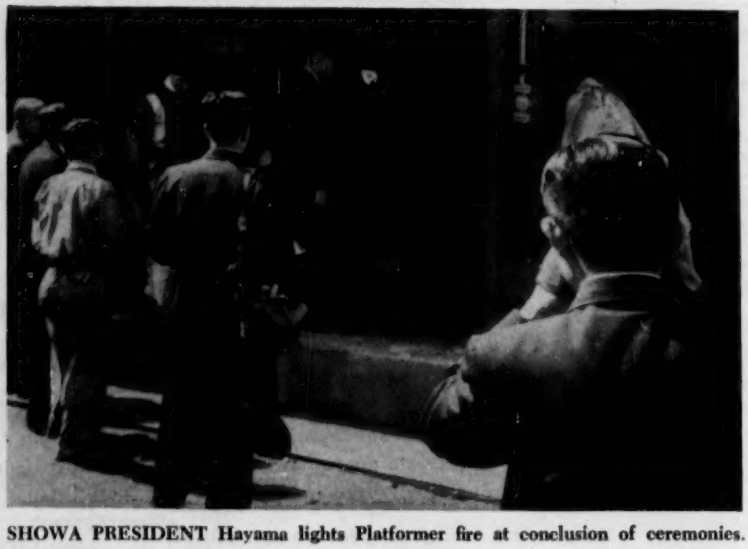
BROWN COMPANY, Berlin, New Hampshire

General Sales Office:
150 Causeway Street, Boston 14, Mass.

SOLKA AND CELLATE PULPS • SOLKA-FLOC • NIBROC PAPERS • NIBROC TOWELS • NIBROC KOWTOWLS NIBROC TOILET TISSUE • BERMICO SEWER PIPE AND CONDUIT • ONCO INSOLES • CHEMICALS



SHINTO PRIESTS swing branches to purge the area of evil spirits.



SHOWA PRESIDENT Hayama lights Platformer fire at conclusion of ceremonies.

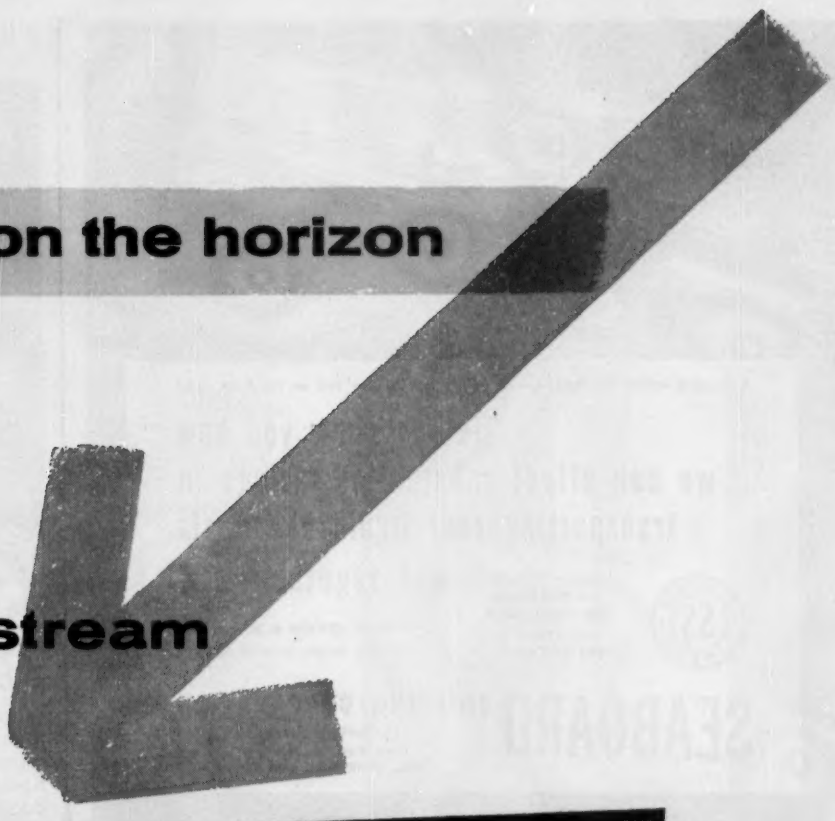
Meeting of the Twain

If Rudyard Kipling had lived to witness the opening of a modern Japanese refinery, he might never have penned his famous words about the incompatibility of the East and the West.

An important part of the opening of any industrial plant in Japan is a preliminary colorful Shinto ceremony designed to drive away any evil spirits that might inhabit the area, to purify the grounds and to ask for divine help in the successful operation of the unit.

Pictured above are portions of the very Eastern rituals attending the opening of a very Western 1300 bbl./day UOP Platforming unit at Showa Oil Co.'s Kawasaki refinery. The assistant priests move through the area swinging branches of a Sakaki tree to cleanse the site, then signify completion by tossing bits of paper in the air. When the chief priest receives their report, he conducts a "lighting fire ceremony" in which he invokes divine blessing on the Platformer. Finally, after the president of the company lights the fire in the unit heater, the invited guests participate by placing a branch of Sakaki on the altar.

Already on the horizon



Soon on stream

Ethanolamines

FOR INDUSTRY

by NITROGEN DIVISION

—production early in 1955

Early in 1955 Nitrogen Division comes on stream with Ethanolamines from its new Orange, Texas, plant.

These Ethanolamines will be just as consistently high in purity, consistently reliable in quality and availability as all other Nitrogen Division products.

Mono— Di— and Tri— Ethanolamines, scheduled for production, will be capable of meeting the purity demands of the tremendous number of Ethanolamine users—and virtually every industry uses these versatile chemicals. Availability in tank cars, tank trucks and drums is assured from storage points from coast to coast.

Write for technical literature and quotations on your 1955 requirements today!

NITROGEN DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Hopewell, Va. • Ironton, Ohio • Orange, Tex. • Omaha, Nebr.

A Seaboard medium size barge enroute from Detroit to New York on the Barge Canal.

let us show you how
we can effect substantial savings in
transporting your liquid chemicals
and vegetable oils

Atlantic Seaboard
New York Harbor
N.Y. State Canals
Great Lakes
Gulf of Mexico

Seaboard operates a modern fleet of tank barges expertly handled.

SEABOARD SHIPPING CORPORATION
17 Battery Place
New York 4, N. Y.
TEL. WHitehall 4-5715

MAKE SURE
ORDER
CARBIDE'S
METHANOL

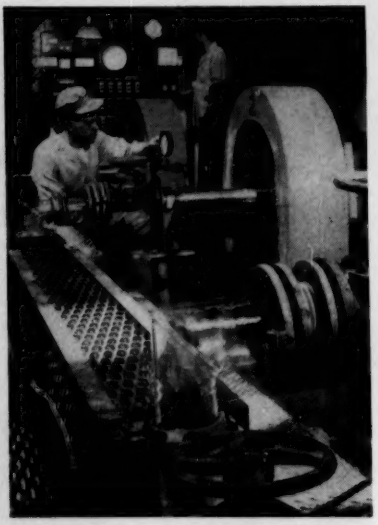
FOR USE AS:

* an intermediate for formaldehyde and methyl chloride.
* a component of special fuels for aircraft, racing cars, and motor boats.
* a solvent for hydrates formed in gas lines.
* a fuel for heating insulated railroad cars.
* an anti-freeze for gasoline.
* a solvent for vinyl acetate adhesives, surface coatings, and inks.
* a methylating agent for organic chemicals, particularly dyestuffs.

Ethanol and isopropanol are also readily available in unlimited tank-car quantities.

For prices and information, call or write the nearest CARBIDE *office. Ask about our 16 other synthetic alcohols.*

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.
In Canada: Union Carbide Canada Limited, Toronto



ALCO PLANT: Switch to chemicals underscores a . . .

Plating Bypass

American Locomotive Co. (Schenectady, N.Y.) has given another boost to General American Transportation's Kanigen* nickel plating process introduced last year (CW, Mar. 23, '53, p. 50). It has started up the biggest plant yet to use the latter firm's chemical process of coating metals with nickel. No stranger to the nickel plating scene, Alco has been doing a lot of work for the Atomic Energy Commission; in fact, it boasts that most of the pipe used by AEC has been turned out by Alco.

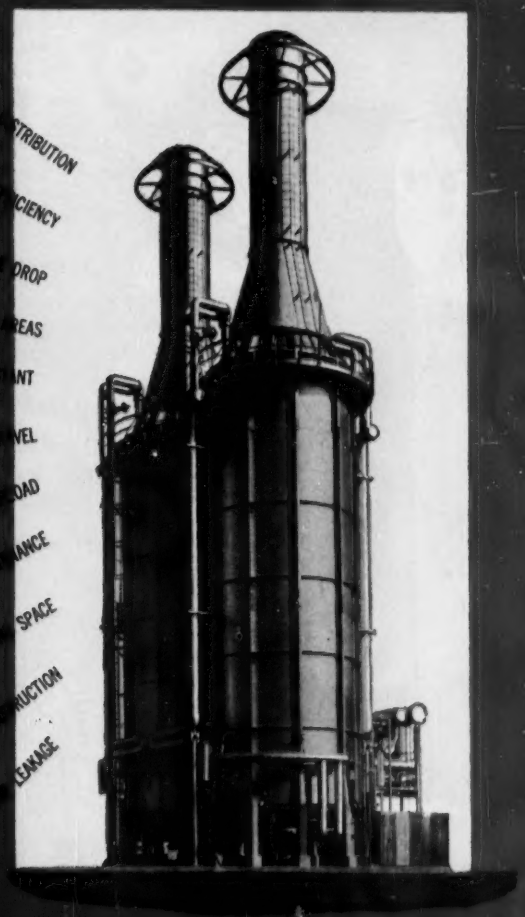
Until recently, however, Alco did all its plating work by means of the conventional electroplating method. Then, last May, it received a license from GATX to employ the Kanigen process, added some refinements of its own (principally in the treatments before and after plating) and tagged the process Alcoplate. It has used it to treat 200,000 million sq. ft. of equipment for AEC.

The firm sees the chemical, petroleum and power industries as prime targets for its nickel-lined wares. Its Dunkirk installation consists of two continuous systems: one for internal coating and for processing a large volume of pieces of similar size; the other, an immersion process, for internal and external coating as well as for product parts.

Essentially, the process is a sodium hypophosphite reduction of nickel sulfate. Glass-lined equipment is used because the nickel deposits on practically all other materials.

*A phonetic contraction for catalytic nickel generation.

If yours is a fluid heating problem



PETROCHEM-ISOFLOW FURNACES

are most efficient by any comparison

MAXIMUM FUEL EFFICIENCY

1. The generic design of Iso-Flow heaters, **including the re-radiating cone,** gives excellent heat distribution and eliminates localized over-heating. 2. All walls are protected by tubes which create low refractory wall temperatures. 3. The refractories have high insulating characteristics which create minimum outside shell temperatures and, hence, exceedingly low radiation. 4. With a radiant loss of under 2% more heat is absorbed by the fluid being heated. This results in higher efficiency for any type of Iso-Flow design. 5. Since Petro-Chem designs include a wide variety of convection sections all heaters can be engineered for optimum fuel efficiency or for maximum fuel efficiency where the price of fuel and other economic considerations justify.

More than 1200 PETROCHEM-ISOFLOW FURNACES are in operation throughout the world in the petroleum, chemical and allied industries... for all processes and for any duty, pressure, temperature and efficiency ... and all Petrochem-Isoflow Furnaces are pre-eminently satisfactory.

PETROCHEM-ISOFLOW FURNACES

UNLIMITED IN SIZE ... CAPACITY ... DUTY

PETRO-CHEM DEVELOPMENT CO., INC. • 122 East 42nd St., New York 17, N. Y.

Representatives: Bethlehem Supply, Tulsa and Houston • Flagg, Brockett & Burgin, Boston • D. D. Foster, Pittsburgh • Faville-Levally, Chicago • Lester Oberholtz, Los Angeles • Gordon D. Hardin, Louisville • Turbex, Philadelphia (Narberth, Pa.)

Foreign Licensees: England – BIRWELCO, LTD., Birmingham 6 • France – HEURTEY & CIE, Paris • Germany – DR. C. OTTO & COMP., Bochum

Low Iodine Chemifats by ADM

HYDROFOL GLYCERIDES T-57-N
HYDROFOL GLYCERIDES T-57-L
HYDROFOL FATTY ACIDS 410
HYDROFOL FATTY ACIDS 420
ADOL FATTY ALCOHOLS 52

ALL 1.0 MAX. IODINE VALUE

Compare samples of any one of these ADM extra-low iodine number "Chemifats" with similar fat chemicals. You'll find these HYDROFOLS measure up to your greatest expectations in the preparation of products which demand maximum color stability and resistance to oxidation.

Send for full particulars on these as well as the full line of ADM Chemicals from fats. Write for the new 40-page HYDROFOL CATALOG.

Hydrofol

ACIDS • GLYCERIDES • SPERM OILS • ALCOHOLS

FROM VEGETABLE • ANIMAL • MARINE OILS and FATS

PRODUCED IN ANY QUANTITY

SAMPLES TO SHIPLOADS

Other ADM Products:
Linseed Oil, Soybean Oil, Fish Oil, Paint Vehicles, Vinyl Plasticizers, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa Meal, Livestock and Poultry Feeds

ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 2, Ohio

PRODUCTION . . . .

EQUIPMENT

Refractory Felt: Originally developed as jet engine insulation, Johns-Manville's (New York) Thermoflex refractory-fiber felt is now being aimed at applications in the process industry. Made of ceramic fibers derived from alumina and silica, Thermoflex is recommended for refractory packing, sound deadening, filtration, thermal insulation; it's said to retain its resiliency in service up to 2000 F.

•

Mixer Heater: An integral hollow shaft and coil assembly has been designed by Rempe Co. (Chicago) for simultaneous heating and mixing of chemical materials. Steam flowing through the shaft and coil provide the heat while flat coil-supporting spokes agitate ingredients. Unit is made of stainless steel, can be used with acids or other corrosive materials.

•

Hermetic Seals: Advanced Vacuum Products Inc. is offering a new line of Advac seals for bonding metal to ceramic. A special metalizing process integrates metal into the ceramic surface, provides a seal to withstand temperatures to 1400 F., pressures to 2000 psi.

•

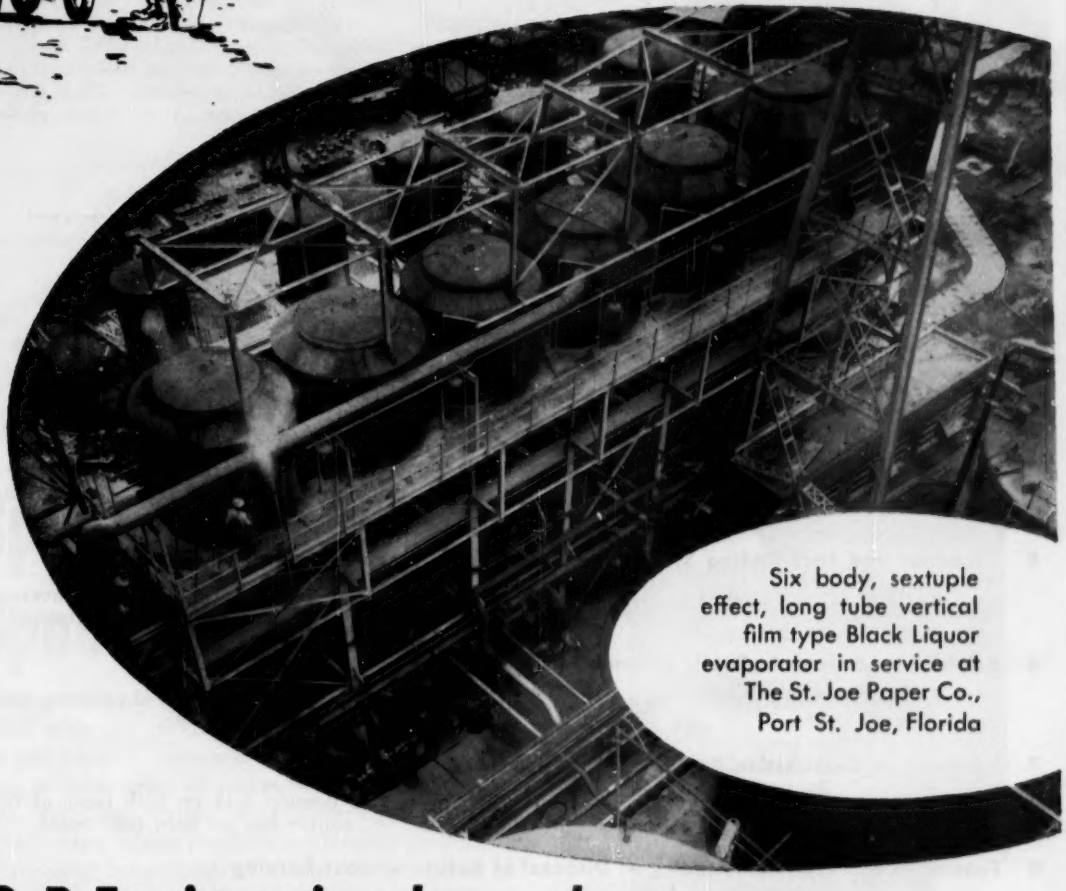
Plastics Progress: Some of the latest bids for chemical process jobs being made by plastics:

• Anderson, Greenwood & Co. (Bellaire, Tex.) has developed a precision safety-relief valve with a Teflon fluorocarbon seat to minimize leaks in reseating. Claims made: the easily replaceable soft seat not only resists chemical attack, but also obviates the frequent relapping required by metal seats to assure a tight seal.

• Ruptureproof gaskets, now offered by the Crane Packing Co. (Chicago), are made of Teflon for corrosive service from —100 to 482 F. Especially recommended for use in glass and porcelain equipment, they feature channel construction to provide full contact with pipe flanges, prevent it from extending beyond the I.D. of the pipe.

• Pre-Fab Heater Co. (Guilford, Conn.) has brought out an electric heater, woven of alloy resistance wire, insulated with fibrous glass, for wrap-around heating of 55-gal. drums. Teflon is used to insulate elements that may be exposed to spillages of acid or alkali. Available at ratings of 1500 or 300 watts on 115 volts, or 3000 watts on 230 volts, the heaters are said to withstand temperatures up to 450 F in continuous operation.

Longer Runs between "BOIL OUTS"!



Six body, sextuple effect, long tube vertical film type Black Liquor evaporator in service at The St. Joe Paper Co., Port St. Joe, Florida

G-B Engineering *know-how* makes the difference!

for, GOSLIN-BIRMINGHAM DESIGN ENGINEERS are also practical plant men with an understanding of plant and process problems. Thus, they are able to combine process knowledge with sound engineering practice to accomplish desired results in any given condition.

THERE IS NO SUBSTITUTE FOR EXPERIENCE!

GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM • ALABAMA

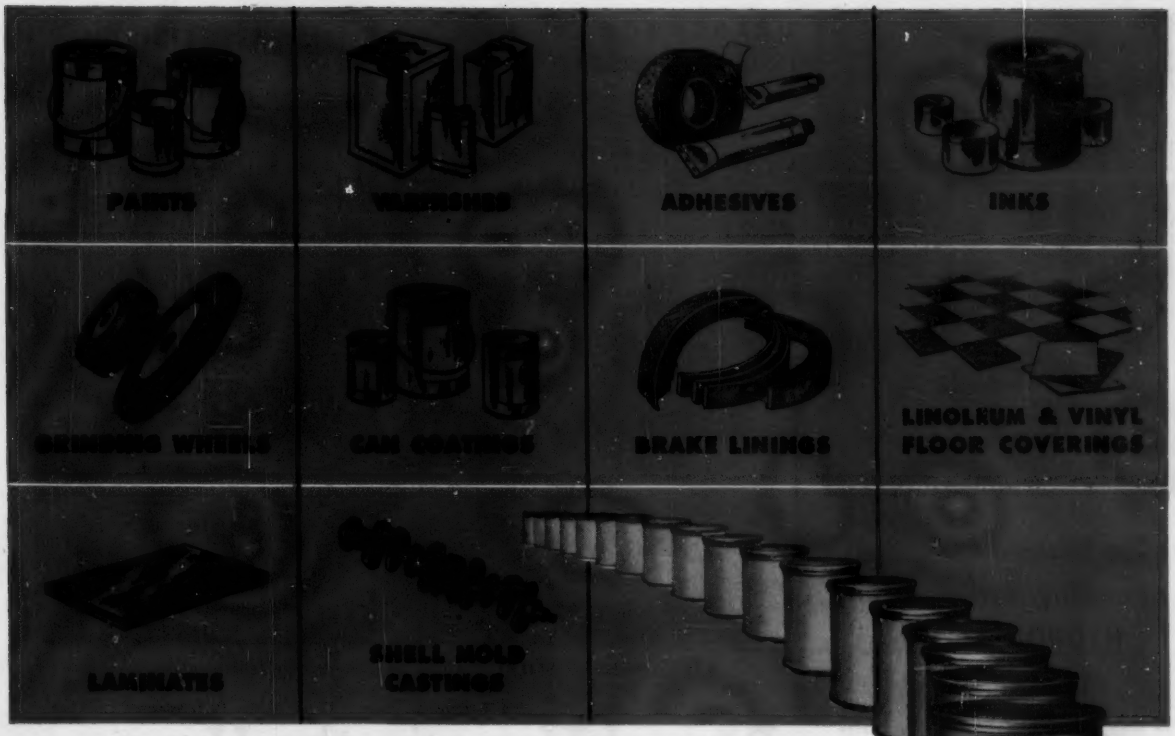
Story continues on p. 72

MAPPING THE ATTACK ON SMOG

An 11-point research program is detailed in Southern California Air Pollution Foundation's proposed $2.2-million appropriation.

1	**Feasibility and Economic Studies of Stop-Gap Procedures**		
	a. Development of catalytic converter for auto exhaust	$200,000	Study of feasibility of developing an oxidizing device to work on leaded gas.
	b. Development of alternate fuels	200,000	Alcohol-gasoline blends, LPG, etc.
	c. Limiting use of motor vehicles	10,000	Both of these points are recognized to be sociological questions. They are included as part of the whole picture.
	d. Control of excessive fumes from smoking exhausts	10,000	
2	**Development of Exhaust Control Methods**		
√	a. Auto exhaust oxidation	$ 75,000	Investigation of catalysts.
	b. Evaluation of proposed devices	75,000	To study devices already developed.
	c. Methods of testing and inspection	50,000	To devise procedures to test converters.
	d. Coordination with auto industry	25,000	
3	**Control of Hydrocarbon Losses During Distribution**		
	a. Filling large tanks	$ 25,000	To study existing loss-control devices.
	b. Filling vehicle tanks	25,000	To develop control methods (devices, etc.).
	c. Coordination with petroleum industry	5,000	
4	**Determination of Smog-forming Potential of Various Pollution Sources**		
√	a. Operation "pilot plant"	$250,000	Large test chamber experiments with actual pollutants instead of synthetic mixtures.
5	**Economic and Fact-finding Study of Public Transportation**		
	a. Effect of each method on pollution	$ 10,000	Pros and cons of different conveyance systems from pollution standpoint.
6	**Establish and Operate Public Information Bureau**		
	a. Comprehensive public relations	not set	To apprise the public of progress, problems, prognosis, etc.
7	**Research on Combustion Products**		
√	a. Auto exhaust composition	$ 37,850	To develop data on both types of fumes; neither has yet been fully tested.
	b. Composition of incinerator gases	25,000	
8	**Feasibility and Economic Studies on Disposal of Refuse without Burning**		
	a. Appraisal of alternatives	$ 25,000	Conference of national experts will yield bulk of data on pros and cons.
9	**Measurement of Smog-producing Factors in the Environment**		
√	a. Air tracer, visibility, pollutant source, etc., investigations	$698,550	To gain a comprehensive picture of the nature, quantity, source, distribution, etc., of pollutants.
10	**Methods of Measurement**		
√	a. Mass spectrometer, infrared, microwave spectra, magnetic resonance, etc.	$195,000	For the mobilization of the most effective scientific instruments.
11	**Fundamental Research**		
√	a. Basic studies in chemistry, physics and meteorology	$273,000	To cover photochemical research, smog-forming reactions, isotope investigations, aerosol formation, etc.

Note: Check mark √ indicates those studies that call for research in the laboratory or field, as distinguished from technical and economic surveys.



Specialists in "Special" Resins...

In today's highly specialized production, a "custom-made" resin can make a great difference in product cost and product performance. That is why more and more manufacturers of paints, varnishes, inks, adhesives, grinding wheels, floor coverings, laminates, brake linings, rubber products and foundry shell molds are utilizing Schenectady's "special resins". Your requirements are our specifications, and at no additional cost.

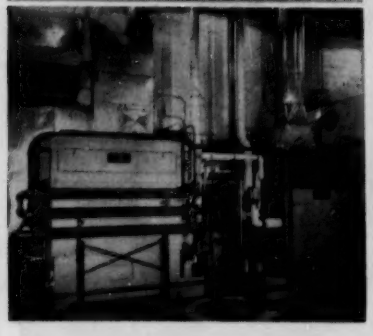
Schenectady products include alkyd, phenolic, terpene, maleic, resorcinol, epon and silicone resins in liquid, lump and powdered form. We invite your inquiries.

SCHENECTADY RESINS
(Division of Schenectady Varnish Co.) 200 Congress St., Schenectady 1, N. Y.
West Coast: R. E. Flatow & Co., 1525 Powell St., Oakland 8, Calif.
In Canada: Paisley Products of Canada, Ltd., Station H, Toronto, Canada
Export Distributors: Binney & Smith International Inc., New York 17, N. Y.

SCHENECTADY PLANT

ROTTERDAM PLANT

DRY AIR...
PRECISELY AS YOU WANT IT



The Niagara Controlled Humidity Method using HYGROL Moisture-Absorbent Liquid

is best and most effective because...it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always. Niagara machines using liquid contact means of drying air have given over 20 years of service.

Most reliable because...the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions.

Most flexible because... you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Inexpensive to operate because...no re-heat is needed to obtain the relative humidity you wish in normal temperature ranges and frequently no refrigeration is used to remove moisture.

Write for full information; ask for Bulletin 112. Address Dept. CW.

NIAGARA BLOWER COMPANY
405 Lexington Ave., New York 17, N.Y.
District Engineers in Principal Cities of U. S. and Canada

LOS ANGELES SMOG: Golden opportunity for chemical research.

Ray of Hope in the Haze

Still edgy from their latest bout with a malevolent atmosphere, Los Angeles residents could take comfort this week in a newly blueprinted attack on the city's celebrated smog.

Embodied in a program submitted to the Los Angeles County Board of Supervisors by the Southern California Air Pollution Foundation, the smog-assault is in the form of a $2.2-million program of research for 1955.

Significant for its size—it's the biggest smog study yet proposed—and its attempt to coordinate the efforts of all agencies working on the problem, the new research program has special meaning for the chemical industry. In the public mind, industry—notably the heavy concentration of petroleum and chemical plants in the area—bears the brunt of the blame for air pollution.

It's fitting, therefore, that chemical research provides the best hope of a final, effective solution of the smog problem. That's true primarily because of the nature of Los Angeles smog.

According to longtime researcher* Lauren Hitchcock, president and managing director of the foundation (*CW, Dec. 5, p. 24*), it's "a new type of smog—something people didn't even know existed a few years ago." The Los Angeles variety is a gaseous concoction, entirely different from the familiar smoke and soot problems of most industrial cities. Moreover, smog—as distinguished by its irritating effects—exists only in the daytime, while air pollutants are present day and night.

Behind this paradox is the strong suspicion that the noxious smog ingredients are the result of photochemical reactions between gases in the area's atmosphere. The identity of all the reactants is a problem for the new research effort. According to Hitchcock, however, "there is mounting evidence that hydrocarbons—particularly olefins—in combination with nitric oxide and sunlight are responsible for the most irritating aspects of our smog."

The hydrocarbon theory is probably the best working hypothesis available, but it's not accepted by all workers in the field. It's widely felt that considerably more research is needed to establish or disprove its validity, and determine just which hydrocarbons (or other agents) are the guilty parties. There's a strong possibility that other organics in the atmosphere take part in spontaneous, light-catalyzed reactions.

One way or the other, though, Hitchcock believes that "probably 95% of Los Angeles' present air pollution is due to incomplete combustion."

Determined not to overlook any potentially profitable avenue of in-

* Previously president of National Dairy Research Labs and at one time associated with Hooker Electrochemical and Quaker Oats Co.

OVEN STABILITY AT 450°F*	0 MINUTES	10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES
Paraplex G-62—0% Dioctyl Phthalate—100%					
Paraplex G-62—25% Dioctyl Phthalate—75%					
Paraplex G-62—50% Dioctyl Phthalate—50%					
Paraplex G-62—100% Dioctyl Phthalate—0%					

STABILITY TESTS AT 450°F ON VINYL FILM PROVE VALUE OF PARAPLEX G-62 PLASTICIZER

PARAPLEX G-60, PARAPLEX G-62, and MONOPLEX S-71 for:

. . . Fast calendering

. . . Long-term durability

. . . Low stabilization costs

. . . Uniform color

***Tests based on this vinyl formulation:**

Vinyl resin	100 parts
Plasticizer	54 parts
Cadmium-Barium Stabilizer	1.5 parts

MONOPLEX and PARAPLEX are trade-marks, Reg. U. S. Pat. Off. and in principal foreign countries.

The stabilizing effect of PARAPLEX G-62 in vinyl compounds is dramatically shown by the test samples above. PARAPLEX G-60 and MONOPLEX S-71 give similar results. Tests of durability, including Fade-Ometer, Weather-Ometer, and outdoor exposure, also demonstrate the ability of these plasticizer-stabilizers to impart resistance to embrittlement and discoloration.

In addition to their stabilizing effect, here are other key advantages of these Rohm & Haas plasticizers:

PARAPLEX G-60—polymeric-type, low volatility, good plasticizing efficiency, resistance to extraction by soap and water.

PARAPLEX G-62—polymeric-type, low volatility, low migration, excellent resistance to extraction by soapy water, oil and gasoline.

MONOPLEX S-71—monomeric-type, flexibility at low temperature, high plasticizing efficiency, lower volatility than conventional monomeric plasticizers.

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

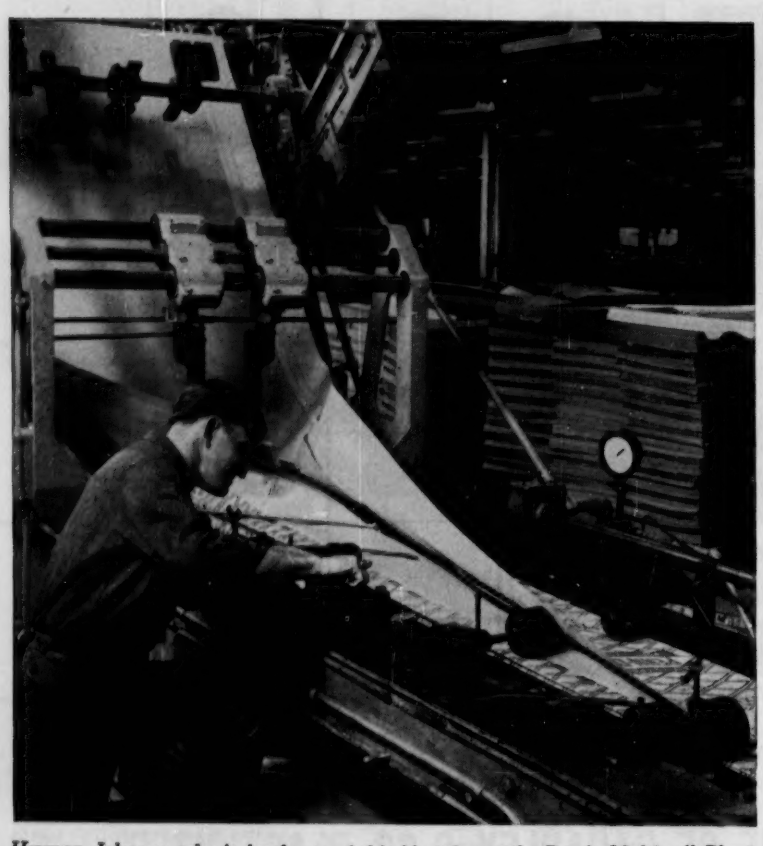
THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries

No. 4 of a series

How Bemis makes GOOD multiwall bags for you



Herman Johnson, who is in charge of this big tuber at the Bemis Multiwall Plant in Peoria, joined Bemis in the tubing department nine years ago and worked up to his present capacity. His job is one of the most important in a multiwall plant.

Experienced Hands Run Our Tubers!

Tubers—the big machines that fold and paste the multiple kraft plies—are the heart of multiwall bag making. Running, they look pretty automatic. But you don't learn to run a tuber by reading an instruction manual. It takes long experience, knowing eyes, deft hands, to keep the plies properly nested and paste properly applied . . . and to control the many other factors that affect the performance of the finished bag. We've been making multiwalls for twenty-seven years . . . so there's plenty of bag-making experience in our twelve multiwall plants strategically located coast to coast.

Bemis

General Offices—St. Louis 2, Mo.

Sales Offices in Principal Cities

vestigation in tracking down the culprits, the foundation has set up a comprehensive strategy of lab and field studies, complemented by economic surveys and other activities of a nonexperimental nature (*see p. 70*).

If the foundation—a private organization comprising civic leaders and companies (e.g., Du Pont, Ethyl Corp., Hancock Chemical, etc.)—has its way, cost of the ambitious research venture will be partly offset by Los Angeles County, the state of California and the federal government. It would bear the brunt of the cost ($702,350) on its own shoulders.

If the Los Angeles supervisors accept the program, they will give their blessing to the foundation for its part, get the county-financed projects under way, and appeal to the state and federal governments for their share.

Whether or not the entire program is accepted, the foundation has plans for $1.8 million in research projects for the coming year. They would be paid for by member contributions (about $700,000 in '55), the remainder by grants from county, state and federal governments.

As Hitchcock sees it, the job of the foundation is to coordinate and reinforce the efforts of existing agencies working on the smog problem. In its first year of existence, which recently came to a close, it collected almost $500,000, of which $444,447 went for the support of contract research at a number of organizations—e.g., Battelle Memorial Institute.

Garnering a piece of the proposed appropriation for 1955 might more than repay the effort for other chemical research organizations.

The first year was largely organizational and exploratory. There was emphasis on bringing together all known information relating to smog research. In addition, there also were conferences of technical people from all over the country—and in some cases from abroad—dealing with such smog-related topics as meterology, vehicle combustion products. The major project undertaken was an aerometric survey—a study of the concentration and movement of smog through the Los Angeles area.

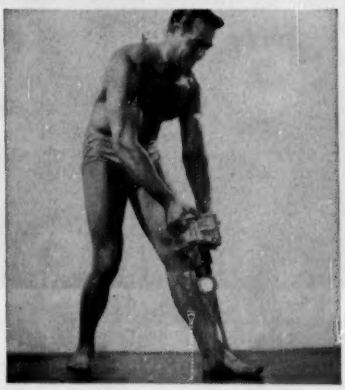
Probably the most concerted attack by industry on the Los Angeles smog problem, the foundation's research plan is not the first attempt by chemical and chemical process firms to meet the challenge. The much-maligned (by southern Californians) petroleum industry, for example, has already spent in the neighborhood of $25 million for research and pollution control equipment.

Polyamide Resins Prove Versatile in More Durable Coatings, Tighter Seals, Cheaper Laminates, Tougher Welds

Blending General Mills' Polyamide Resins 100 or 115 with epoxy resin has opened a whole new field of uses. Though both components are thermoplastic the blends emerge as thermosetting compositions.

The reactive Polyamide and epoxy resin blends make adhesives of great strength and versatility—highly resistant to mechanical shock, heat and chemical action. These adhesives bond like and unlike, porous and non-porous materials; wood, metal, glass, leather, plastic, rubber, paper, neoprene and fabric.

By varying the ratio of Polyamide to epoxy resin, it is possible to vary the properties of the cured mixture. Generally high Polyamide content gives greater softness and greater toughness, whereas high epoxy content gives increased hardness. They cure well (having low exotherm and shrinkage), have high dielectric strength, and are water and alkali resistant.



Glass, wood, plastic, metal and leather are bonded above with a blend of General Mills Polyamide Resin and epoxy resin. Tensile shear strength is 2,500 lbs./sq. in. on aircraft aluminum.

Because of these and other properties, new uses already include: enamel coating for wood and metal products, structural adhesives, container sealing and caulking, overprint varnish, electrical insulation, fabric and glass-fiber laminations, and potting and casting compounds.

POLYAMIDE RESIN	DESCRIPTION	PROPERTIES	RECOMMENDED USES
90	Hard, flexible resin at about 180° C; thermoplastic; insoluble in most common solvents; average Mol. Wt. 6000-9000.	Resistant to water, strong alkalis, acids, oil, grease and most chemicals. Soluble in hot alcohol and hydrocarbon mixtures. Gels most solvents at extremely low concentrations at room temperature.	Metal-to-metal welds (combined with Polyamide Resin 100); very small quantities markedly raise the melting point of other Polyamide Resins; forms a solder replacement when filled with aluminum powder.
93	Hard, flexible resin; melting at 105-115° C; soluble in alcohol and hydrocarbon mixtures; thermoplastic average Mol. Wt. 6000-9000; slightly higher viscosity, weight and toughness than 94.	Excellent heat-sealing; nonyellowing; good gloss; moisture vapor resistance; good heat stability at high temperatures. Provides excellent barrier to oils and greases.	Solvent coatings; hot-melt applications; heat seal adhesives; fire retardant paints; aniline and rotogravure inks; coatings for transparent packaging materials; overprint varnishes.
94	Similar to 93 with lower viscosity; lower Mol. Wt. 3000-6500.	Same as for 93.	Same as for 93.
95	A form of Polyamide Resin 94, compounded for paper coating —improved sealing, blocking properties, and resistance to moisture vapor transmission.	Miscible with Polyamide Resins 90, 93, 94 and 100 for formulation of heat seal coatings with excellent flexibility and MVT resistance; heat seals at 80-100° C.	Hot-melt or solvent coatings with excellent decorative and heat sealing properties.
100	Soft, sticky resin melting at 43° C. minimum.	Pressure sensitive. Combined with Epoxy Resins to form hard, abrasion resistant, yet flexible thermosetting blends. Plasticizer; tackifier and modifier for various other resins.	Metal-to-metal welds (combined with Polyamide Resin 90). When blended with epoxy resins, Polyamide Resin 100 forms decorative and protective coatings for paper, wood and metal; enamel coatings; overprint varnishes.
115	Soft, sticky resin more fluid than Polyamide Resin 100; also more reactive with Epoxy Resin. Pourable at 75° F. or higher.	Reacts with Epoxy Resins in the same manner as Polyamide Resin 100. May be used in or without solvent.	Same as Polyamide Resin 100; also useful with fluid epoxy resins in casting, potting and laminating applications and non-solvent adhesive applications.

When Used Alone, thermoplastic Polyamide Resins give high-gloss coatings of great flexibility and moderate scuff resistance.

They are used often as adhesives or coatings for paper labels, metal foils, cellophane, shoes, packaging, book and magazine covers, and many other materials . . . often substituting for more expensive coatings and plastic laminations.

Polyamide Resins may be applied by either hot melt or solvent solution. And, they may be modified for higher or lower melting point, greater flexibility, or added tackiness for adhesives.

☆☆☆☆☆

Polyamide Resins are characterized by non-volatility, sharp melting points, and resistance to moisture, alkalis, mild acids, grease and oil, and most common chemicals.

You can get General Mills Polyamide Resins uncompounded (for adding plasticizers, waxes or other resins) or compounded (for improved sealing properties and resistance to blocking and water vapor).

They are virtually non-volatile and have very little odor. Also, in several years of research work, no toxic effects have been noted.

Polyamide Resins 90, 93, 94, and 95 are furnished by General Mills in non-returnable fiber drums . . . net weight about 175 lbs. . . . in both LCL and carload quantities. Polyamide Resins 100 and 115 are packed in open-top steel drums. Solutions of number 100 are available at 60% solids.

PROGRESS THRU RESEARCH

SEND THIS COUPON:

General Mills ☆☆☆☆☆ **CHEMICAL DIVISION**
KANKAKEE, ILLINOIS

Please send me technical information for the products checked below.

Polyamide Resins: ☐ 90 ☐ 93 ☐ 94 ☐ 95 ☐ 100 ☐ 115

Name_____

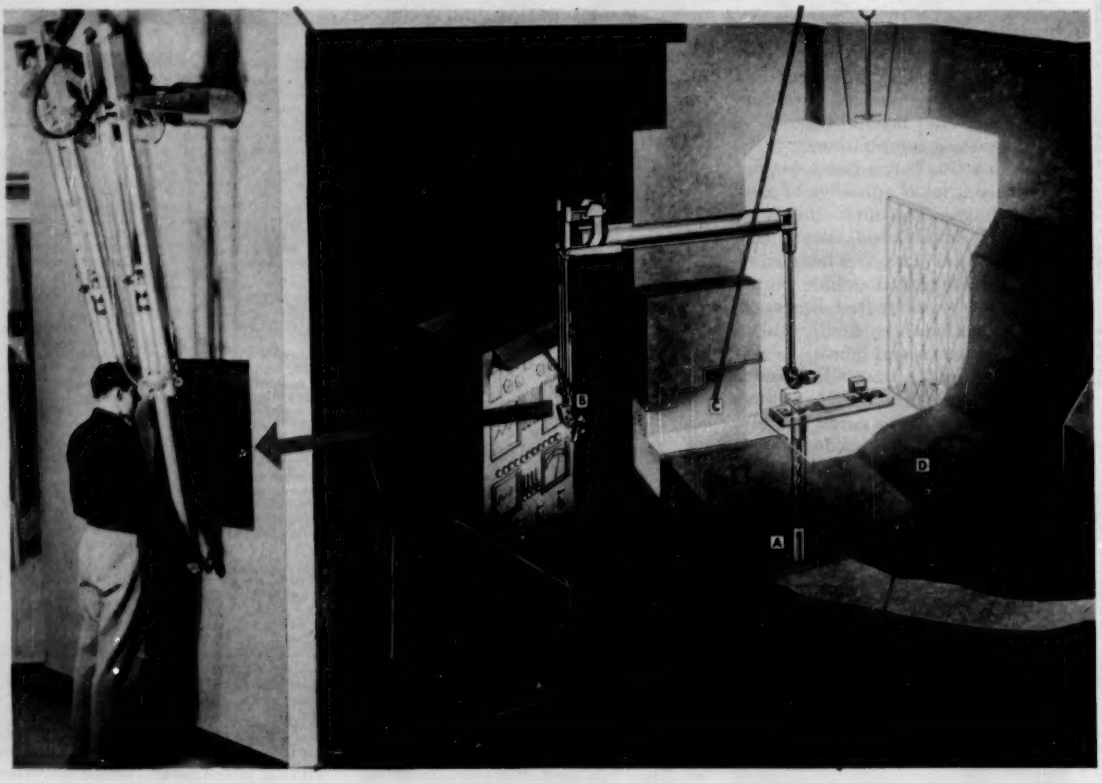
Firm_____

Address_____

City_____ State_____

Mechanical arm allows researcher to work steel "slave" hands inside "cave."

Lead-glass window, over 3 ft. thick, is needed for safe observation.



Radioactive source, a length of cobalt pipe, nestles at bottom of storage well.

Four feet of concrete in safety walls give lab its cave-like appearance.

Robot Toiler for Radioactive Cave

The good right arm of the radioisotope chemist is a pair of mechanical hands that bear the colorful title, "master slave manipulators." With them he may safely handle hazardous radioactive substances in the multitude of delicate operations required of exacting research.

Within the past fortnight, private industry has laid claim to its first* "master slave manipulators." They will be installed in the new radiation laboratory that Standard Oil Development Co. is erecting at its Linden, N.J., research center. There —in a 6 x 9-ft. concrete cell—they will animate SOD's attempt to harness gamma rays.

Gamma radiation promotes many useful reactions of which polymerizations are perhaps the most fruitful for immediate study.

SOD's gamma rays will emanate from a 13-in.-long piece of 2-in. cobalt pipe made radioactive by a 2½-year-long neutron shower.

With the aid of the "master slave manipulators" and a 3-ft.-thick protective window, researchers outside (*see above left*) the small cave-like room will be able to position the pipe, inside, against laboratory apparatus containing substances to be irradiated.

When not in use, the pipe will be stored in a well in the "cave" floor, and covered by a thick lead cap. While the source is in the well, and only then, will staffers be able to enter the "cave" with complete safety. The pipe cannot be raised accidentally while someone is in the "cave."

Precautions such as these, and the mechanical devices to enforce them, are the inevitable trappings of research with radioactivity. One of the first and largest private projects of its kind, the new SOD laboratory is a timely industrial object lesson in building for radiation research.

* All previous mechanical hands were made for the Atomic Energy Commission and its contractors.

● The Buffalo Electro-Chemical Company, Inc. and the Becco Sales Corporation have been merged with Food Machinery and Chemical Corporation. Effective January 1, 1955 they will operate as "Becco Chemical Division", Food Machinery and Chemical Corporation.

The personnel with which Becco customers are familiar will continue to operate Becco Chemical Division. Customer service, research and production will prevail at the same high level as for more than 25 years past.

BECCO® BRIEFS

PEROXYGEN CHEMICALS

The properties of Becco Peroxygen chemicals, and their current and potential uses, are described in a large number of detailed and authoritative bulletins. Send for your copy of Becco's Bulletin List.

Becco Peroxygen products include Hydrogen Peroxide, Peracetic Acid, Sodium Carbonate Peroxide, Sodium Pyrophosphate Peroxide, Urea Peroxide, Calcium Peroxide, Magnesium Peroxide, Zinc Peroxide, Potassium Persulfate, Ammonium Persulfate, Acetyl Peroxide, Sodium Perborate.

Buffalo Electro-Chemical Company, Inc.

DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION

fmc

Sales Agent: BECCO SALES CORPORATION, Station B, Buffalo 7, N.Y.
Buffalo • Boston • Charlotte • Chicago
New York • Philadelphia • Vancouver, Wash.

Please send me the Becco Bulletin List from which we may select bulletins of interest to us.

Name .....

Company .....

Street ..... Zone ..... State .....

City .....

$CH_3(CH_2)_{16}CH_2OH$

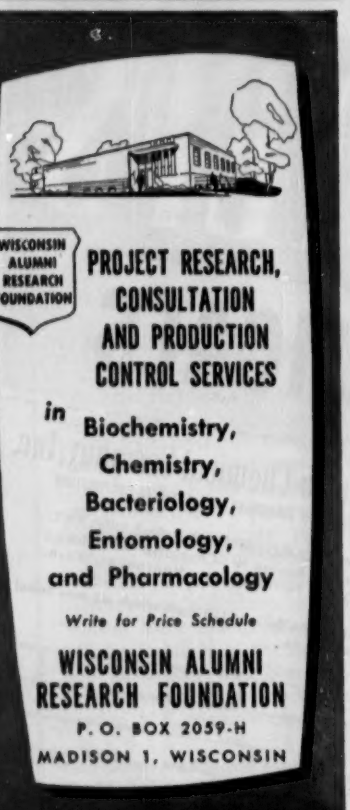
Be an expert on fatty alcohols in five minutes

Want to know why the chemical processing industries use more fatty alcohols today? *And how you can use these versatile long-chain compounds in your products?*

Twenty-five years of original research is summed up in "Possibilities", a booklet on CACHALOT brand fatty alcohols. Typical uses for CACHALOT cetyl, oleyl, or stearyl alcohols as additives or intermediates: detergents, emulsifiers, lube oils, fuels, cosmetics, paint, plasticizers. CACHALOT advantages: vacuum-distilled uniformity, clean-packed, NF/USP/technical grades, prompt delivery, competitive prices.

Send for the CACHALOT fact-file. Write **M. Michel and Company, Inc.,** 90 Broad Street, New York 4, N. Y., basic suppliers to chemical manufacturers. Their trade name for the largest line of fatty alcohols commercially available in tonnage lots of controlled uniformity is

Cachalot



Sleeper in Synthetics

Textile research, like football, can take some funny bounces. And nowhere does the analogy hold truer than in man-made fibers. Latest surprise is Celanese Corp. of America's new cellulose triacetate.

Everybody in the acetate-rayon business has tried his hand at developing a triacetate fiber, but—until recently (*CW, Oct. 16, p. 86*)—no one has seen fit to take one out of the laboratory and into production.

Manufacturers have pretty well stuck to acetylating, on the average, 2.5 out of each 3 hydroxyl groups on the cellulose. This is the familiar rayon-acetate fiber. Yarn made this way has been felt to have optimum physical properties (hand, dyeability, etc.), least trouble in spinning (extrusion through a spinneret).

Now, Celanese—in breaking with the past—claims that its researchers have shown that improved yarn properties are made possible by triacetylation. Its new triacetate fiber, named Arnel, is claimed to have an edge over regular acetate in resistance to heat, sunlight, saponification, and wet stretching. A part of this desirable range of properties is due, in some measure, to a heat treatment the fiber receives after it is spun.

What limited mill experience there is with the fiber is said to be encouraging.

Bright Expectations: Reiner Stoll, head of Celanese's textile division research, expects the triacetate to be used in major textile applications including several that now utilize cotton and rayon. He sees immediate markets for it in gabardines, suitings, and woven and knitted lingerie. Stoll considers Arnel a good bet for children's apparel because of its "wash-and-wear" properties. It will also be vying for the sportswear market. Fabrics made from it are said to give complete washability in a wide range of colors with easy removal of soil, freedom from shrinkage, and little need of ironing.

Right now, Arnel staple is priced at 55¢/lb., somewhat higher than cotton, but well below the synthetics. Both bright and dull yarn are available in 2½ denier (any standard length). Filament yarns are in the offing.

Other major acetate yarn producers are eyeing the new development with understandable interest. They're unanimous in feeling that anything that is good for acetate is good for the industry. But they are still not tipping their hands as to how soon they will be making a triacetate fiber of their own (although millions of pounds of triacetate are made annually for plastic uses).

Mixed Emotions: Du Pont admits that it has, in the past, evaluated the triacetate as a fiber, declines to comment further. Tennessee Eastman doesn't contemplate any Arnel-like candidate of its own in the near future. And American Viscose tells *CW* that it is still investigating such a fiber in its own laboratories.

But at least one other firm is already meeting the challenge. Canadian Celanese Limited (Montreal, Que.), no direct corporate relation to the Celanese Corp. of America, is now producing triacetate filament yarn and fabric in semicommercial amounts at Drummondville, Que. The company calls its fiber Trilan, expects to be making the staple form soon.

The textile-buying public, conditioned to superlative claims for "wonder" fibers, may prove tough to sell this time. But if triacetates live up to their billing they could prove a welcome bolster for a badly sagging rayon-acetate market.

Know-How for Sale

Recently released by the Commerce Dept. (Office of Technical Services) are 11 government research reports covering a gamut of chemical subjects. Here's how they line up.

• "Electrostatic Dissipation by Electrically Conductive Rubber" ($1) indicates that the new super abrasion furnace (SAF) blacks are superior to acetylene blacks as static dissipating agents, includes a 54-item bibliography on conductive rubber.

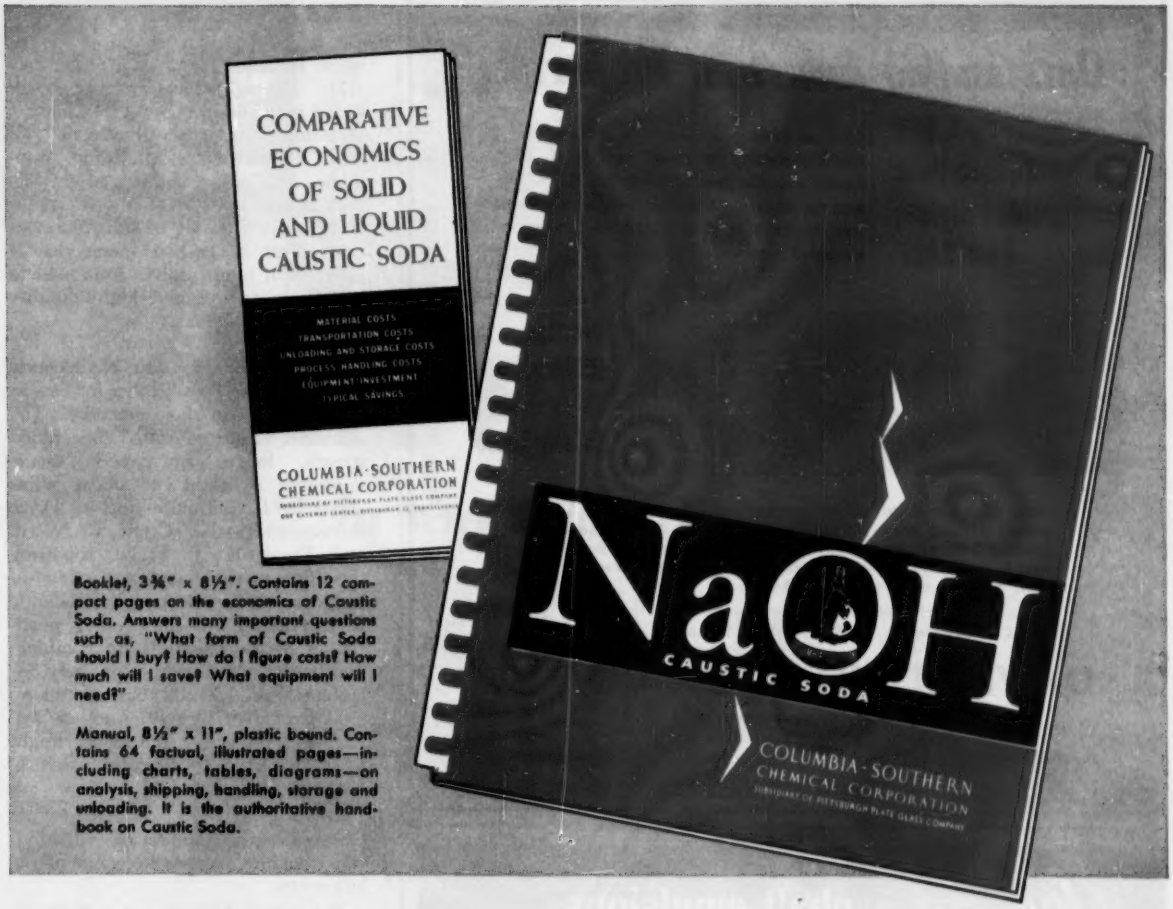
• "Electrical Properties of Phthalocyanine" ($2) describes equipment for preparing films and crystals of phthalocyanine and copper phthalocyanine by vacuum sublimation, charts conductivity measurements vs temperature up to 160 C.

• "The Effect of Alkali and Alkaline Earth Metal Ions on the Activity of Cracking Catalysts" ($1) details results of an extensive investigation of the poisoning of three calcined cracking catalysts by barium ion and the alkali metal ions.

• "Techniques of Handling and Using Ba^{140} as a Tracer" ($1) describes use of Ba^{140} as a tracer to determine the rate of evaporation of barium oxide coatings.

• "Gamma Radiation from Interaction of 14-MEV Neutrons with Various Elements" ($1). The materials studied include carbon, oxygen, aluminum, iron, nickel, copper, cadmium and lead.

• "Ignition Properties of the Iso-



Booklet, 3¾" x 8½". Contains 12 compact pages on the economics of Caustic Soda. Answers many important questions such as, "What form of Caustic Soda should I buy? How do I figure costs? How much will I save? What equipment will I need?"

Manual, 8½" x 11", plastic bound. Contains 64 factual, illustrated pages—including charts, tables, diagrams—on analysis, shipping, handling, storage and unloading. It is the authoritative handbook on Caustic Soda.

Do you have these two valuable books on caustic soda?

If your work involves the handling, use, purchasing, or economics of Caustic Soda, and you do not have these books, you are urged to write for your free copies today. Ask for "Caustic Soda Manual" or "Caustic Soda Economics Booklet." If you want both, please specify. Use company stationery and send your request to Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston • New York • St. Louis • Minneapolis • New Orleans • Dallas • Houston • Pittsburgh • Philadelphia • San Francisco

Outstanding Industrial Properties

200,000 Square Feet (May divide) FOR SALE

Price secondary to desirable industry for a fine community. 50 miles from N. Y. City. heavy construction, sprinklered, R. R. sidings for 50 cars, 5,000 H. P. boilers, abundant free water & disposal facilities, 20 acres, unlimited acreage adjoining.

Prestige Building 36,000 Sq. Ft. Sale or Lease

Only three years old, tile brick construction, wide bays, 2.5 acres, paved parking area, all utilities, R. R. main line, tailgate truck loading both sides, 14-foot ceiling clearance, automatic oil fired and H. P. & L. P. boiler. Excellent labor. 25 minutes from N. Y. C., near Newark, close to new Parkway.

Immediate possession on both properties

Consult David W. Settle, Vice-President

DAVID T. HOUSTON CO.

200 Washington St., Newark, N. J.

Newark: Mitchell 2-8250 New York: COrtlandt 7-3909

Laykold asphalt emulsions can reduce your costs of producing **...bonding agents**

Photomicrograph of Laykold Emulsion

Asphalt emulsions are more and more widely used for compounding of insulating materials, panel boards, felts, glass fibres, etc.... and for *green strength* in certain molded products such as fire brick. Why? *Laykold* asphalt emulsions are stable, inert, lowest cost components you can buy.

Write for details and samples.

AMERICAN Bitumuls & Asphalt COMPANY

200 BUSH ST. • SAN FRANCISCO 4, CALIFORNIA

E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala. Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La. St. Louis 17, Mo. Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore. Washington 5, D. C. San Jose 23, P. R.

meric Hexanes (Ignition Studies, Part III)," 75¢, covers research for better diesel fuels, describes the influence of molecular structure on ignition.

• "Alarm, Carbon Monoxide, Automatic, E23" ($1). Subject of this report is an indicator that gives rapid and postive warning of sublethal concentrations of carbon monoxide. It operates at temperatures from —40 to 125 F, in salt air and high-humidity atmospheres.

•

Cancer Signal: Porphyrin has recently been found to be selective for cancer cells, can aid in their detection. The chemical, injected into the blood stream, lodges in cancer tissue, fluoresces a bright red under ultraviolet light. Baltimore doctors D. S. Rasmussen-Taxdal, Grant E. Ward, and Frank H. J. Figge, reporting their find to the American College of Surgeons at a meeting in Atlantic City, pointed out some other possibilities of the chemical. In combination with iodine, porphyrin may facilitate X-ray identification of cancer, aid in curative surgery. Another possibility: radioactive porphyrin might prove to have therapeutic value in cancer treatment.

•

Plastic Progress: Irradiated polyethylene is making further steps out of the laboratory.

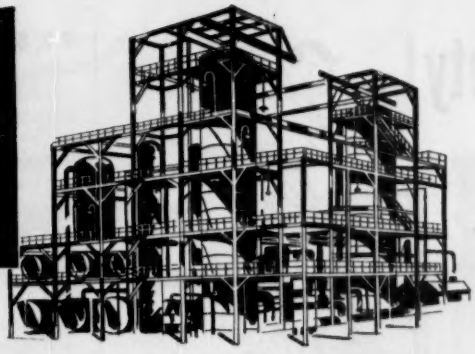
• General Electric Co.'s Philadelphia plant is using a stabilized version of the company's irradiated polyethylene tape (*CW, April 3, '54, p. 69*) as turn insulation in circuit breakers. Called Irrathene 201, the tape is said to combine high dielectric strength with the thermal and mechanical properties needed for circuit breaker operation.

• And from the American Agile Corp. (Maple Heights, O.) irradiated polyethylene, Agilene-HT, is available as rods, sheets, pipe, tubing, block, and custom-fabricated items of limited size. Agilene-HT vessels can now be made in capacities up to 30 gal. But the company is pushing development of irradiation equipment to handle much larger structures.

•

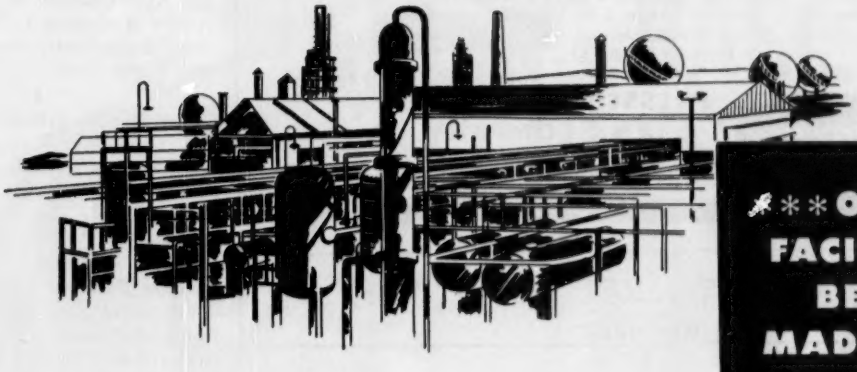
Stabilizer Re-examination: Some fresh views on the stabilization of organic compounds against peroxide formation stem from research at Britain's Imperial Chemical Industries Ltd. Covered by British patents 688,703 and 688,704, the work shows that such deterioration can be prevented by the addition of 1,4-diamino-2,3,5,-6-tetramethyl benzene (or its alkylated or acylated derivatives) and by the addition of 0.001-1% of 2,3,5,6

* * NEW PROCESSING UNIT GOING IN—



DUAL PROJECTS

in the Same Plant



* * * OLD FACILITIES BEING MADE NEW

For one of the major oil companies, we are now carrying out simultaneously two distinctly different engineering and construction assignments:

* * **We are designing and soon will be constructing a 3-stream gasoline treating unit to handle straight run, catalytic reformed, and catalytic cracked gasolines. *That's the something new going in.***

* * * ***The turning of something old into something new*** **involves substantial revamping of the light products transfer piping systems. A complete engineering study will lead to the optimum piping and transfer pump relocations to correlate with new product schedules.**

Engineering

Design and Construction of Process Plants

•

Design and Construction of Process Units

•

Process Evaluations

•

Economic Studies

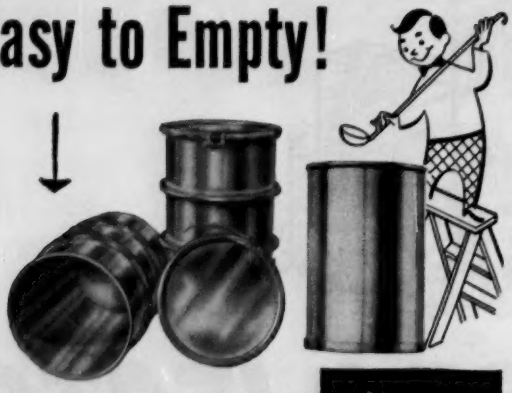
The process section of the project implies recognition of experienced unit design talent. The offsite facilities called for something quite different. Knowledge of refinery operations in general, yes, but also knowledge of refinery piping, valving, and pumping in all their many-sided aspects.

Perhaps you would like to have such versatile engineering experience work with you on your expansion or modernization plans whether it involves a complete plant, new unit, special equipment, or offsite facilities.

BADGER MANUFACTURING COMPANY

230 BENT STREET, CAMBRIDGE 41, MASS. · 60 EAST 42nd STREET, NEW YORK 17, N. Y.

Easy to Empty!



Easy to empty, easy to clean, easy to refill! These are three cost-cutting, time-saving advantages of Hackney Open Head Returnable Containers. The Hackney welded chime is crevice-free and easy to clean—is reinforced for strength and durability. Your choice of Hackney Toggle-tite, or single bolt closure. Made in stainless steel—or in plain steel with black, galvanized or tinned finish. Furnished without I-bar hoops, cover, or clamp ring, if desired. Write for the new Hackney Drum and Barrel Catalog.

Hackney

PRESSED STEEL TANK COMPANY

Manufacturers of Hackney Products

1448 66th St., Milwaukee 14, Wisconsin

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

WINTHROP

THIOPHENE

Limited Quantities Now Available

From Pilot Plant Production

•

We also offer laboratory quantities of

3-Methylthiophene

Special Chemicals Division

Winthrop-Stearns INC.

1450 Broadway
New York 18, N. Y.

RESEARCH . . . . . .

tetraalkylated phenols such as 2,6-diisopropyl-3,5-dimethyl phenol.

•

Butanol Boost: According to recent work at Takasago Perfumery (Tokyo) a good new catalyst for hydrogenation of crotonaldehyde (to butanol) is prepared by depositing copper with a small amount of potassium chromate on kieselguhr. It reportedly gave better than 90% yields at 200 C; the crotonaldehyde flow rate was 8 moles/hour/liter of catalyst.

•

Phosphoric Wetters: A recent U.S. patent (2,648,706) assigned to California Research Corp. (San Francisco) cites hydroxyamides of alkylphosphoric acids as wetting agents. Among the best: the hydrochloride salts of the diguanides of phosphoric acids.

•

TB Aid: Calcium N.N'-dicarbamoyl cystine is claimed to be an effective new tuberculostat, according to Japanese patent 5389.

•

Glycol Source: Britain's Distillers Co. Ltd. researchers have converted 1,2-epoxides into the corresponding glycols at 150-200 C with aqueous alkali at pH 12-13. The new synthesis is covered in British Pat. 686,402.

•

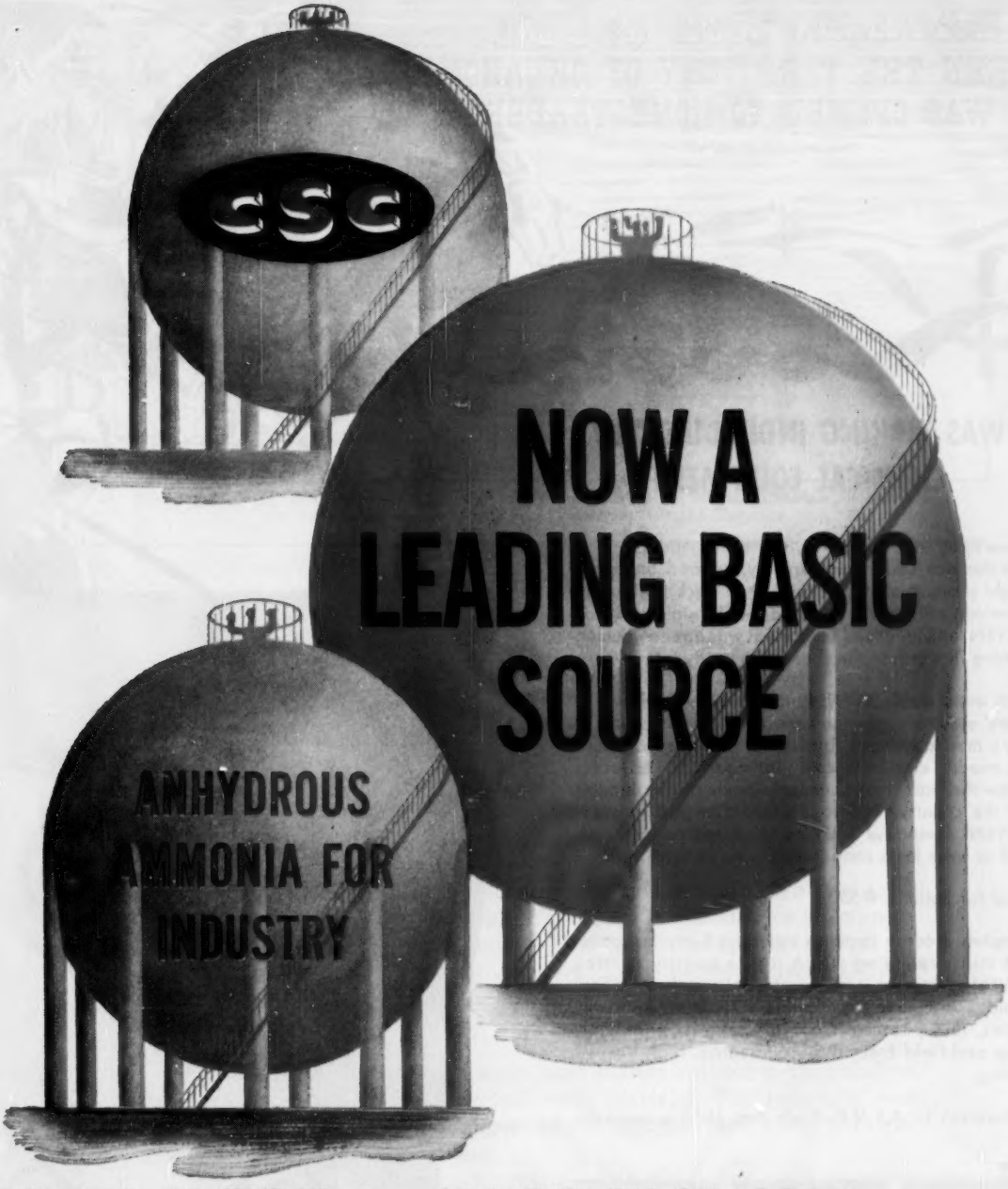
Vacuum Furnace: For research and development purposes, Naresco Equipment Corp. (Newton Highlands, Mass.) offers a new 30-lb. induction vacuum furnace. Available with either a vertical or horizontal shell, the furnace features the addition of charge or alloying materials during melting, without loss of vacuum.

•

Vitamin Assay: A new service of Foster D. Snell, Inc. (New York) is vitamin D assay (of animal feeds, pharmaceuticals, vitamin fortified foods, etc.). Tests are performed at the company's Supplee Laboratory Division, (Bainbridge, N. Y.).

•

Naval Stores: A just-organized research project at Georgia Institute of Technology's (Atlanta, Ga.) engineering experiment station is seeking new uses for gum naval stores. First step in the program has been the establishment of a naval stores testing laboratory where identification of the various constituents of tree gums will be undertaken. So far, the gum industry has suffered from a paucity of by-products. Production of gum naval stores declined 44% in the last five years, largely because of competition from more versatile wood naval stores and petrochemicals.



With the completion of the $20,000,000 expansion program at Sterlington, La., CSC is producing anhydrous ammonia at double its former capacity. It establishes CSC as a leading, basic source of ammonia for the chemical industries and assures you of a dependable source of supply of anhydrous ammonia on a year-round basis.

Versatile as a raw material and in processing operations, CSC anhydrous ammonia, technical and refrigeration grades, is being used in the fields of Resins, Textiles, Metals, Rubber, Explosives, Petroleum, Refrigeration, Dyes, Water Purification, Fermentation and as an ideal Neutralizing Agent.

CSC Anhydrous Liquid Ammonia is available in tank cars containing approximately 52,000 pounds of ammonia. Write, wire or phone us today for latest Technical Data Sheet and 48-page Ammonia Bulletin. Industrial Chemicals Sales Department, Commercial Solvents Corporation, 260 Madison Avenue, New York 16, N. Y.

COMMERCIAL SOLVENTS

260 MADISON AVENUE NEW YORK, N.Y.

CSC INDUSTRIAL CHEMICALS

BACK IN THE 1880'S
WHEN THE TERRITORY OF OKLAHOMA
WAS OPENED TO HOMESTEADERS

Koven

WAS MAKING INDIVIDUALIZED CHEMICAL EQUIPMENT

Wave upon wave of land-hungry homesteaders poured into the rich Oklahoma territory, spurred on by the bright promise of opportunity. And back East, where America's growth was reflected in industrial expansion, KOVEN Individualized Equipment was already demonstrating its worth to the chemical industry.

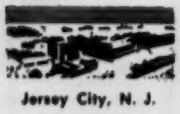
Each dependable KOVEN unit is the result of over 70 years' accumulated engineering skill combined with today's most advanced fabrication methods . . . assures the smooth, efficient output that means higher profits. Follow the lead of top chemical manufacturers throughout the country. End your production problems with KOVEN equipment built to your individual needs. Call or write for a consultation — no obligation.

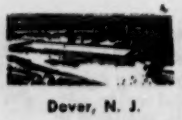
Send for Bulletin #550.

Complete modern facilities including X-ray inspection and stress relieving which insure quality control. KOVEN equipment in all commercial metals and alloys include: Pressure vessels, extractors, mixers, stills, kettles, tanks, chutes, containers, stacks, breechings. Shop and Field Erected Storage Tanks. High Vacuum Testing.

Fabrication to A.S.M.E. Code Par. U-68 a specialty.

Plants:


Jersey City, N. J.

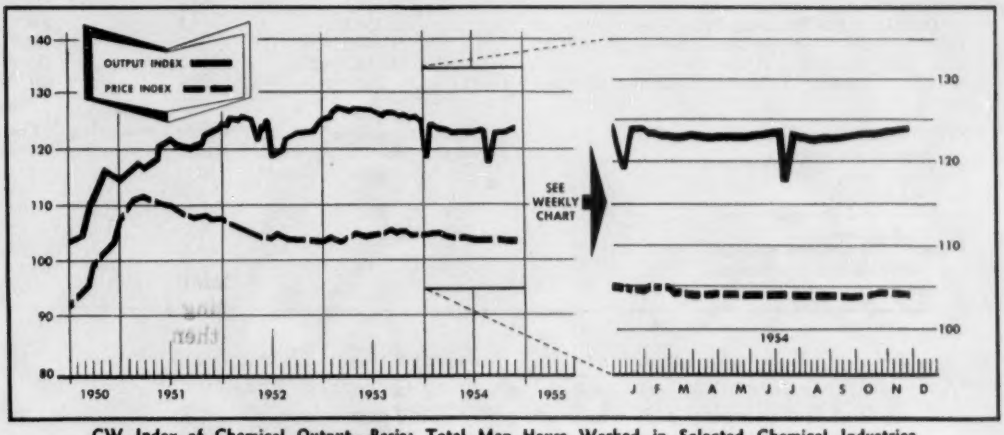

Dover, N. J.

Trenton, N. J.

L. O. KOVEN & BRO., INC.
154-A Ogden Ave., Jersey City 7, N. J.

Nickel hopper

KOVEN FOR INDIVIDUALIZED EQUIPMENT SINCE 1881



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

News of market consequence was propounded triply—though not simultaneously—by major styrene monomer producers this past week. Dow, Koppers and Monsanto began offering, for the first time, synthetic rubber-grade styrene to private industry consumers. The price, too, was new—cut 3¢ down to 18¢/lb. (tank cars).

Previously that particular grade was sold only to government-owned synthetic rubber plants, while industrial customers got along with a 21¢ commercial-grade product.

The move to make the rubber-grade styrene available on the open market, says Koppers, will "enable certain American industries to improve the economics of their operations, which have recently been hurt by foreign competition." (The material is suitable for such uses as tires, rubber soles and heels, paper, textiles, floor tile paint.)

•

Two cents less. That's what most sodium carboxymethylcellulose users are paying now for technical-grade material. The reduction was initiated by Wyandotte's Michigan Alkali Division last week, but was quickly emulated by other makers.

A company spokesman explains that the lower price is made possible through new and improved facilities at the Wyandotte, Mich., installation, which effected increased production at lower manufacturing costs. Demand from detergent and other industrial uses has been heartening.

•

Expanded facilities is also the reason behind lower titanium tags. Du Pont—for the second time this year (*CW Market Letter, April 10*)—dropped prices on both its Grade A-1 and A-2 ductile sponges. The former now sells for $4.50/lb., down 22¢; the latter, $4, a 46¢/lb. cut.

The company's output is running pretty close to a boosted 10-ton/day capacity at its Newport, Del., plant. Bulk of the titanium applications are still in military planes, but the metal's resistance to chemical corrosion invites many potential industrial outlets.

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	124.3	124.1	124.9
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.2	104.9
Bituminous Coal Production (daily average, 1,000 tons)	1,470.0	1,495.0	1,488.0
Steel Ingot Production (1,000 tons)	1,944.0 (est.)	1,941.0 (act.)	1,955.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	362.7	353.9	267.0

MONTHLY INDICATORS—Foreign Trade (Million Dollars)	Exports Latest Month	Exports Preceding Month	Exports Year Ago	Imports Latest Month	Imports Preceding Month	Imports Year Ago
Chemicals, total	81.6	85.4	77.5	20.7	15.5	21.8
Coal tar products	6.0	6.0	5.1	3.3	2.1	3.0
Medicinals and pharmaceuticals	19.9	19.3	21.0	0.5	0.6	0.5
Industrial chemicals	12.0	13.2	11.3	5.5	4.6	5.5
Fertilizer and fertilizer materials	6.9	7.1	3.7	9.1	6.3	9.0
Vegetable Oils and fats, inedible	2.0	4.4	2.5	6.1	6.4	4.4

But not all prices are on a downward trend. Shellac, for instance, continues to mount—and at a rate to bring concern to some traders. Fear is that the climbing cost will scare away some customers.

Now, though, most buyers of industrial shellac are taking fair volumes of available material, apparently trying to cover upcoming needs in view of the hikes. Thus, the situation, some observers report, has a cart-before-the-horse twist—the better demand is the result, rather than the cause, of the markups.

•

Fertilizer makers are looking ahead, too. Producers, taking advantage of the current easing in calls, are building stocks, preparing for next spring's planting demands. But prospects of ample supplies then of just about all fertilizers heightens the probability of a recurrent condition: farmers will tend to procrastinate. Prediction: the perennial distribution-storage problem will crop up, putting latecomers in a supply squeeze.

•

Domestic naphthalene can't be termed abundant, but to date no user is being pinched. Developments in the import field, though, are spawning speculation in the domestic market. Better European consumption of 78° naphthalene has cut down offerings here, at the same time pressuring prices upward. Some quotes on the import go as high as 6½¢/lb.

Domestic schedules are still pegged at 5¢, but the question being heard in some quarters is, "for how long?" Demand from most regular outlets is running briskly, but part of the increasing demand is attributed to customers' bettering inventories at the current price, before any increase materializes.

•

In another coal chemical arena, cresylic acid demand is well sustained. The push comes primarily from better tricresyl phosphate business, but there's some improvement noted in cresylic resins as well as wire enamel uses. Prices: firm enough to brook no immediate changes.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending December 6, 1954

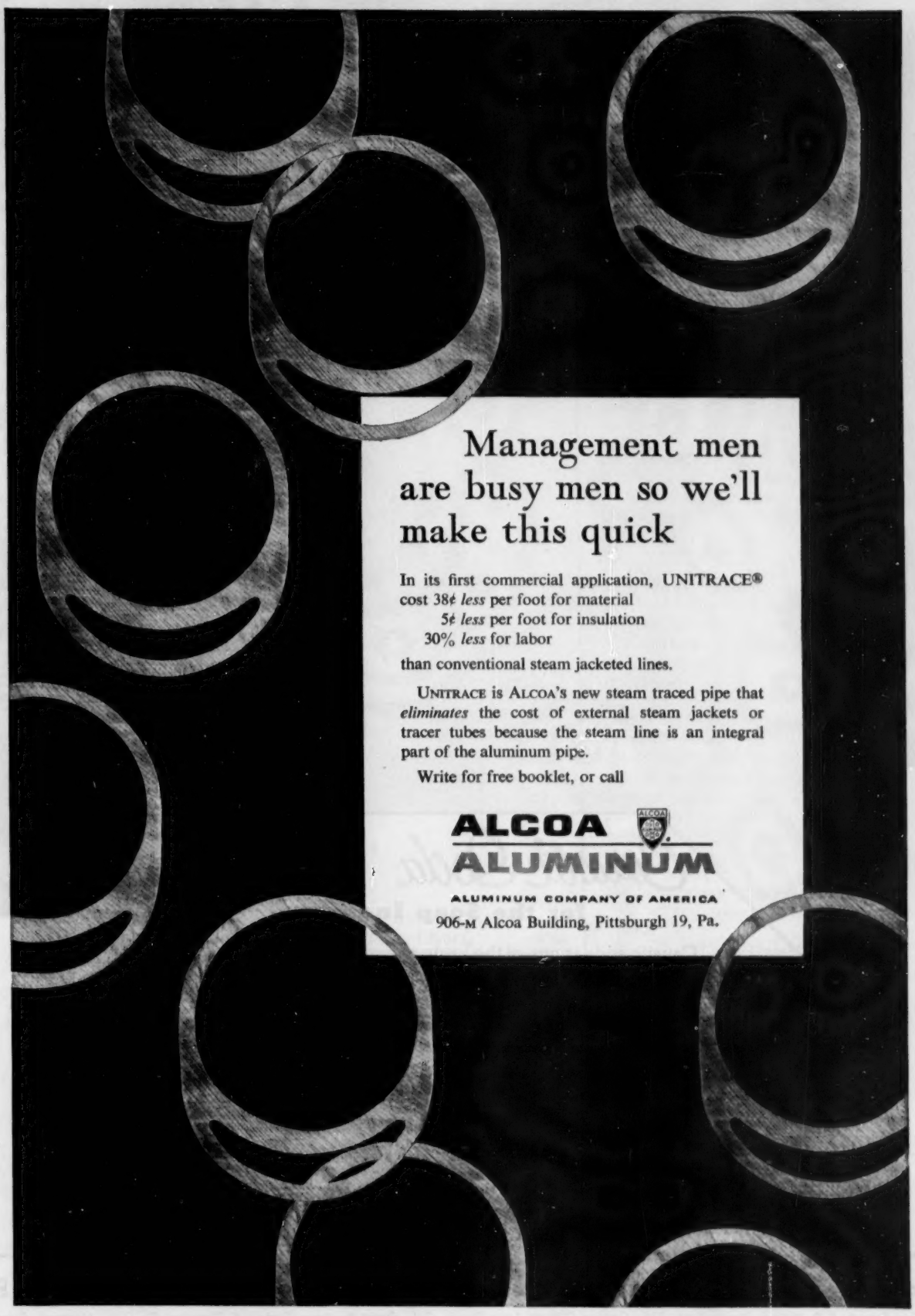
UP

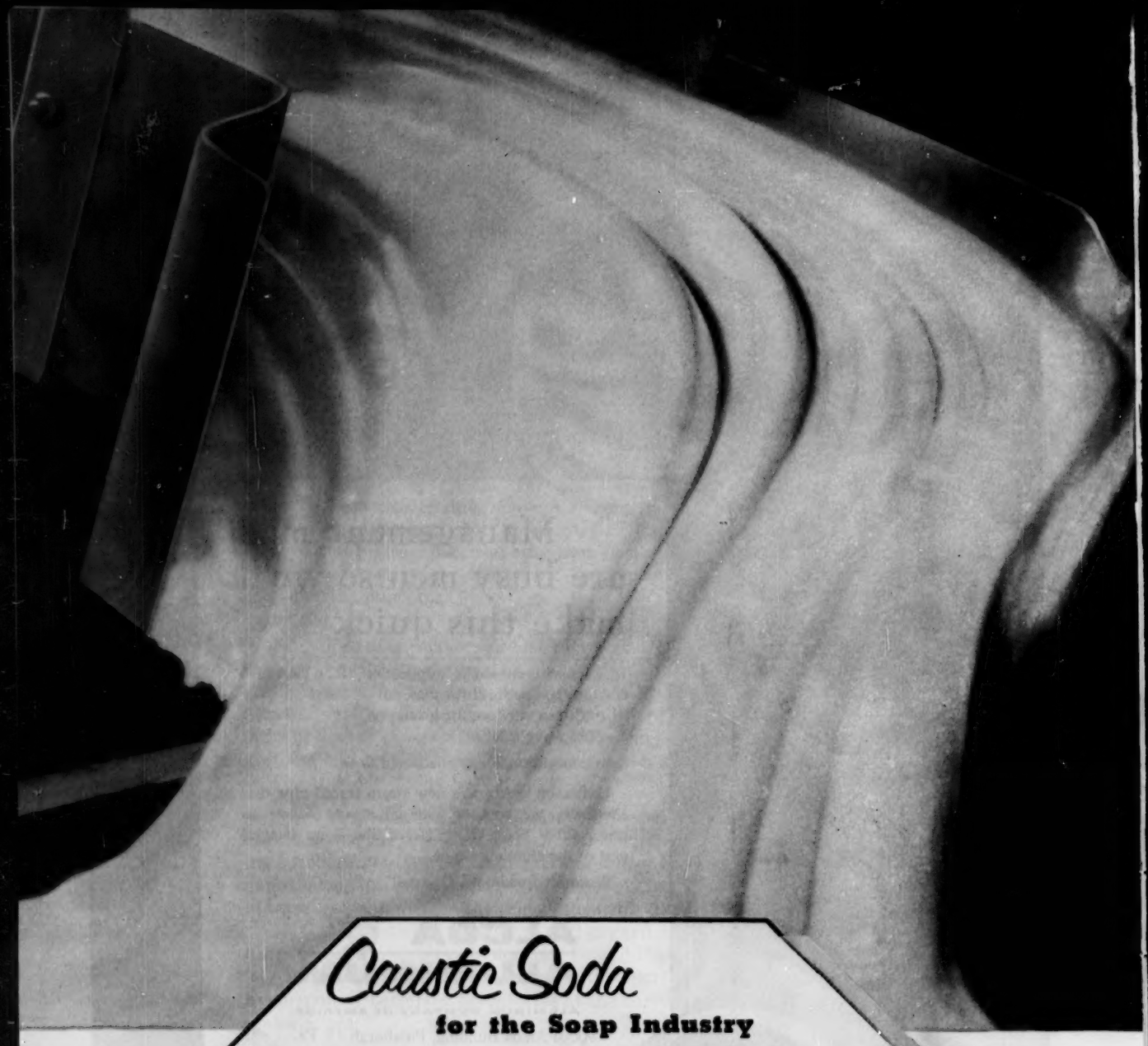
	Change	New Price		Change	New Price
Creosote, wood, pine, tanks, works	$ .002	$ .427	Nitrogenous tankage, bulk, works (per ton)	.25	5.00
Naphthalene, imp., 78°, large lots	.005	.06			

DOWN

	Change	New Price		Change	New Price
Mercury, metal, 76-lb. flasks (per flask)	$5.00	$315.00	Titanium sponge, Grade A	.22	4.50
Styrene, syn. rubber grade, 99%, tanks	.03	.18	Grade B	.46	4.00

All pirces per pound unless quantity is stated.


Management men are busy men so we'll make this quick
In its first commercial application, UNITRACE® cost 38¢ *less* per foot for material
5¢ *less* per foot for insulation
30% *less* for labor
than conventional steam jacketed lines.
UNITRACE is ALCOA's new steam traced pipe that *eliminates* the cost of external steam jackets or tracer tubes because the steam line is an integral part of the aluminum pipe.
Write for free booklet, or call
ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA
906-M Alcoa Building, Pittsburgh 19, Pa.



Caustic Soda

for the Soap Industry

Caustic soda is one of the basic chemicals required for the manufacture of modern soaps.

Uniformly high quality GLC GRAPHITE ANODES are basic too—in helping the electrolytic industry meet the growing civilian and defense needs for chlorine and caustic soda.

ELECTRODE DIVISION

Great Lakes Carbon Corporation

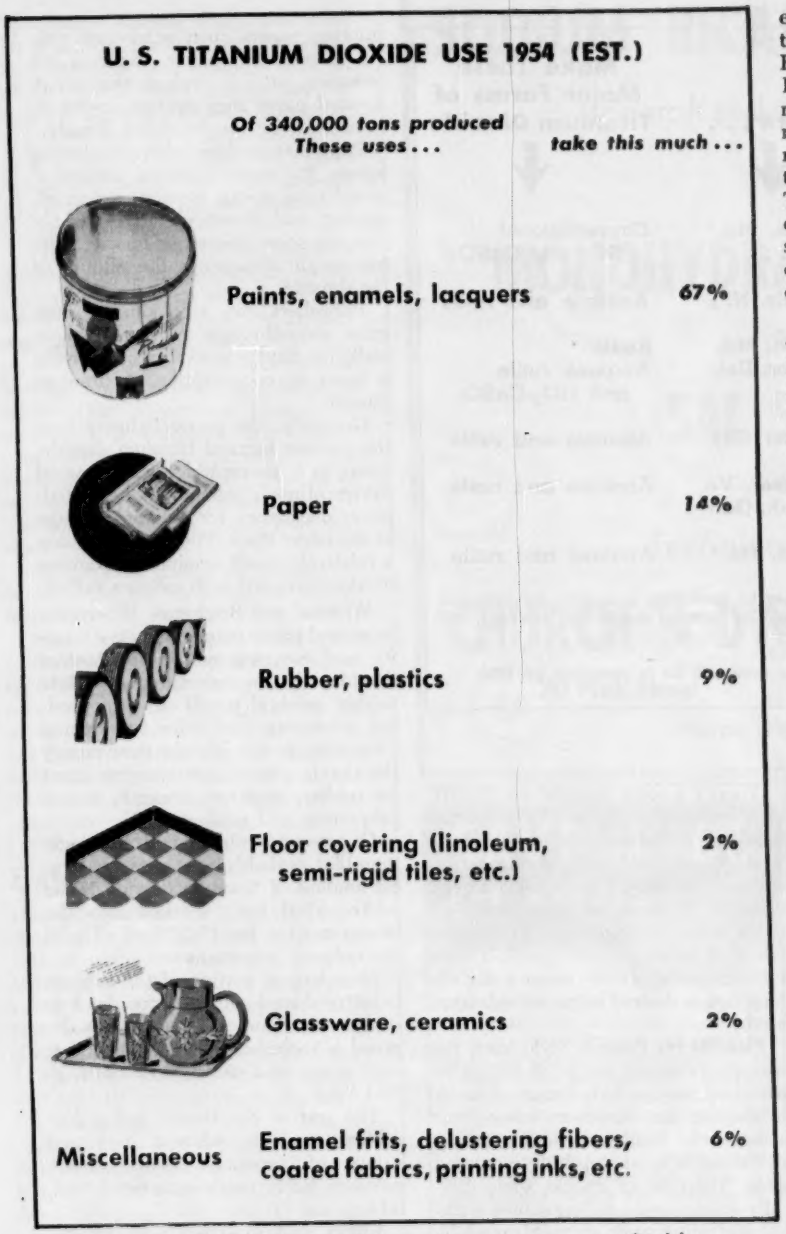
Niagara Falls, N.Y. GLC Morganton, N. C.

Graphite Electrodes, Anodes, Molds and Specialties

Sales office: Niagara Falls, N.Y. **Other offices:** New York, N.Y., Oak Park, Ill., Pittsburgh, Pa.

Sales Agents: J. B. Hayes, Birmingham, Ala.; George O'Hara, Long Beach, Cal.; Great Northern Carbon & Chemical Co., Ltd., Montreal, Canada

Overseas Carbon & Coke Company, Inc., Geneva, Switzerland; Great Eastern Carbon & Chemical Co., Inc., Chiyoda-Fu, Tokyo



DIVERSIFICATION is a trend, but paints and paper pace titania's . . .

Push for Coating Outlets

Chemical marketers usually keep an eye on exports, but when overseas shipments that normally account for about 10% of a commodity's sales, spiral upward by over 50% in one year, interest brightens at once. Today that's the record of exported titanium dioxide with year's end just ahead.

By the time the last shipment leaves the U.S. this year, an estimated 60,000* tons of titania and dioxide-bearing pigments will have been foreign bound. This transfer will be a sharp climb above last year's total exports of 39,780 tons of titanium dioxide and pigments.†

In recent years about 60% of these exports have gone to Canada. Early this year a surge began in exports to Europe and to Australia. The United Kingdom alone, by the end of this month, will have bought nearly 13 million lbs. of the dioxide and pigments from the U.S.—more than 20 times as much as they took last year. That's a sequel to the U.K.'s offering credit to buyers who are pinched for supplies. A tight worldwide market, of course, underlies the sharp rise in exports.

* Based on first seven months' export figures.
† Exports of titanium dioxide and pigments were 35,636 tons in 1952, 39,242 tons in 1951, 32,660 tons in 1950.

Steady Potential: Despite this foreign-demand flurry, titania marketers in this country look upon the efflux as a temporary movement—one that will halt when foreign output catches up with demand. Meanwhile, the year-in and year-out growth of domestic requirements for paints, enamels, and rubber—and especially for paper at the present time—is sparking several expansions (*see table, p. 90*).

Prognostications for the year ahead peg output of titanium dioxide at somewhere between 340,000-350,000 tons, not much above last year's total of 340,937 tons. The latter figure was an 8.4% lead on '52's production of 314,442 tons, but only about 7% above 1951's 319,139 tons.

Two-Thirds on the Surface: The principal share of this output goes traditionally into the paint, lacquer, and enamel industry. In fact, this uptake of titania accounts today for two-thirds of domestic consumption (*see chart, left*). For every dollar expended on titanium dioxide the paint and lacquer manufacturers get so much more covering power for the money than with other white opacifiers that the dioxide has undisputed top billing among white pigments. Note the hiding-power-vs-price comparison with several commercial white pigments:

	Hiding Power* (sq. ft./lb.)	Price ($/lb.)
Rutile TiO_2 (nonchalking)	147	.245
Anatase TiO_2 (nonchalking)	115	.225
Lithopone (ordinary)	27	.075
Zinc oxide (lead free)	20	.135
ZnO (35% leaded)	20	.1425
Basic carbonate white lead	15	.175
Basic sulfate white lead	13	.1575

* Calculations based on Proc. A.S.T.M. 30, Part II, 895 (1930).

Whiter Houses: Recent dollar sales of both trade and industrial paints, varnishes, and lacquers (varnish sales

U. S. Producers . . .	Here . . .	Make These Major Forms of Titanium Dioxide
Titanium Pigment Corp. (subsidiary of National Lead Co.)	St. Louis, Mo.[1]	Coprecipitated TiO_2 and $CaSO_4$.
	Sayreville, N. J.	Anatase and rutile
Du Pont, Pigments Dept.	Baltimore, Md.	Rutile
	Edgemoor, Del.	Anatase, rutile and TiO_2-$CaSO_4$
American Cyanamid, Pigments Div.	Gloucester City, N. J.[2]	Anatase and rutile
	Piney River, Va.	Anatase and rutile
	Savannah, Ga.[3]	
Glidden Co.	Baltimore, Md.[4]	Anatase and rutile

1 By midsummer the St. Louis plant will also be producing pure TiO_2 for pigments.
2 New Jersey Zinc has bought the Gloucester City plant of American Cyanamid, will take possession in 1955.
3 Under construction; in operation by mid-'55.
4 Additional plant capacity in the Baltimore area will be in operation by 1956.

are not reported separately by the Bureau of Census) shows a leveling off from $1.40 billion to an estimated $1.36 billion this year. However, there's an inclination today to use more titanium pigment (14-15%) in white house paints for increased covering power of the paint, because of the trend to one-coat repaint jobs. A gallon of average white exterior paint contains about 1.6 lbs. of the dioxide; a new exterior white paint now on the market, however, contains 3.0 lbs./gal.

In interior flat paints, whether alkyd or the latex forms, some 15-20% by weight of the ready-to-use product is titanium dioxide. Slightly more TiO_2 is required per gallon of water-base paints than in alkyd paints. Reason: the pigment is spread out more by water thinning. About half of the dioxide that's consumed in light-colored flat paints is sold in a form extended with calcium sulfate (typically 30% TiO_2, 70% $CaSO_4$). However, quite a few paint and enamel makers buy titanium dioxide and blend it with calcium sulfate or calcium carbonate for special effects.

No less than for the flat paints the semigloss makers also use the dioxide in the range of 15-25% by weight of paint product. The uptake of titania in glosses or enamels extends through a slightly wider range—between 15-30%, but probably averages 25%.

There's a solid demand for 20-30% of titanium dioxide in the industrial baked alkyd, or urea and/or melamine white coats on durable goods—refrigerators, washing machines, stoves, cabinets, freezers, etc. For nearly all of the white and light-colored pigmentation of white durable goods is with rutile pigment. (Only when a slightly blue cast is desired is the anatase form used.)

Plaudits for Pastels: Style leads the way to increased usage of titania in pastel automotive baked coats. A tussle is shaping up, however, among car makers who want more hiding power and those who are pushing increased gloss. There is, of course, some difficulty in increasing hiding power without sacrificing some gloss. Meanwhile, titania sellers look to the automotive field for an increasing take of their products.

Stops Show-Through: Compared with paints and enamels, the paper industry ranks a poor second in uptake of titania (*see chart, p. 89*). But rated on growth it's one of the most promising outlets for increased sales of the pigment. Makers of glassine, wax- or resin-treated papers are quickening the demand for titanium dioxide.

A similar problem is licked by the dioxide in minimizing show-through and thereby increasing the printing contrast and legibility of lightweight printing papers, such as air-mail writing paper, thin-paper catalogs, directories, etc. A typical titania-pigmented paper may contain anywhere from 1-5% by weight of the dioxide.

Papermakers may alert purchasing agents for more titanium dioxide if postal rates go up. Reason: magazine, catalog, and directory mailers can obtain the same degree of opacity with less weight of paper by the addition of the dioxide.

Publishers, too, who aim to minimize show-through on pages (especially for display work) are also giving a boost to consumption of titanium dioxide.

Generally, the paper industry uses the anatase form of titanium dioxide. There is a perceptible swing toward the use of rutile pigment, in the coated-paper magazines, for greater coverage of the paper stock. The trade uses only a relatively small amount of titanium dioxide extended with calcium sulfate.

Whitens and Brightens: Where the paint and paper people favor the opacity and covering power of titanium dioxide, the manufacturer of white rubber goods depends on it for product whitening and color brightening (*see chart, p. 89*). For the same money the titania acts as a reinforcing agent for rubber, improves strength, flexing properties, and resilience.

Of consumer rubber goods the single item that probably consumes the largest amount of titanium dioxide is the white-walled tire. It dips into the titania market for 15-20% of all rubber industry requirements.

Next largest portion of the rubber-industry-shared titania spreads into rubber tile floor covering. (That demand is included under "floor covering" in the *end use pattern chart, p. 89.*)

The rest of the titania going into rubber products whitens a varied gamut of products: boots, shoes, galoshes, heels, sundries, inflated toys, tubing, etc.

Either anatase or rutile grades can be used in most rubber products except in white side walls. For the latter, quite recently, the anatase pigment has come to the fore, since it's now thought to resist ozone checking (cracking) more than the rutile form.

A look into the immediate future sees little change in titanium requirements for rubber goods. There is, it's true, a slight nod toward a growing percentage of white side walls in the automotive field.

The Floor Beautiful: Just as in certain grades of paper or liners, covers, etc., the superior hiding power and color-brightness of titanium dioxide

(in amounts ranging from 5 to 25%) has greatly upgraded various types of floor coverings. One technical director familiar with the manufacture of linoleum, printed felt-base coverings, and with asphalt, vinyl asbestos, or rubber tiles tells *CW* that "their equipment could not hold enough lithopone to do the job that's done now by titanium dioxide."

Wherever users of white pigments choose titanium dioxide—paints, paper, rubber, printing inks, etc.—the desired effect depends principally on the hiding power, the opacity of that pigment. Of course, titanium dioxide has for quite a long time replaced some silica in vitreous enamels to promote acid resistance, and a major coup in the ceramic industry was the development since World War II of an especially opaque titania type of vitreous enamel for sheet iron and steel.

The ceramic grades of titanium dioxide round out its duties by service in arc welding rods.

From the flash of an arc welding rod to the brilliance of floor tile, the sheen of a new auto, or the glamor of a magazine display page, titanium dioxide has built a tidy and stable market. In a world that vies for each load of titania shipped from the U.S., the dioxide marketer has a legion of applications to sustain sales.

Export Rules

Overseas markets for U.S. tallows and greases—now taking close to 50% of this country's production — have widened to such an extent that ground rules have become necessary. Early this month the Animal Fats and Oils Trade of the N.Y. Produce Exchange adopted an industry-drawn contract and trading rules for bulk exports of the products.

Need for a U.S. export contract for tallows and greases arose only in the last few years when the U.S. changed from the pre-World War II position of a net importer of fats and oils to that of the world's largest exporter. Shipments to foreign buyers currently are running at an annual rate in excess of a billion pounds.

U.S. exporters, faced with a growing business for which no regular rules had been established in this country, and in which little or no official trade customs existed, worked closely for several months, with members of the Produce Exchange and representatives of the various branches of the trade. Result: a Uniform New York Produce Exchange Contract. Grades and specifications of the tallows and greases are comparable to present trade standards.

SODIUM BICARBONATE, U.S.P.

Specialized Grain Sizes

•

MONOHYDRATE of SODA

•

SAL SODA

•

Technical Service

CHURCH & DWIGHT CO., Inc.

70 Pine Street **New York 5, N.Y.**

Phone Digby 4-2181

SAVE UP TO $66 PER BARREL

NORCO Wooden Barrels and Kegs' low initial cost with no deposit, return or cleaning costs can save you up to $66 per barrel investment. Inventory costs are reduced. NORCO answers many of your chemical, liquid and food shipping storage problems perfectly.

Made of select, vertical tight-grained non-porous Douglas Fir, they are light-weight, tough and durable with minimum shrinkage or swelling and low tare weight. Proven better for Phosphoric Acid, Acetic Acid, Oxalic Acid solutions.

Easy to up-end and store, NORCO Barrels and Kegs are lined to your specifications with Micro-Crystalline wax or other linings as required. Always new! 5-10-15-30-50 gal. sizes, pilfer-proof, extra-strong. Available in I. C. C. Specifications.

Let NORCO reduce your packaging costs—write, wire, phone today!

Largest variety of wooden barrels and kegs in America

NORTHERN COOPERAGE CO.

Division of the Greif Bros. Cooperage Corp.

Concord & E. Page, St. Paul 7, Minn.

CApital 8-4900

Get This Informative Free Booklet on New Uses for Straits Tin

New, 20-page booklet tells important story of Straits Tin and its many new uses today. Fully illustrated. Includes sections on new tin alloys, new tin solders, new tin chemicals. Covers tin resources and supply, Malayan mining. Booklet is factual, informative — could well prove profitable to you. Mail coupon below today.

THE MALAYAN TIN BUREAU

Dept. G, 1028 Connecticut Ave. Washington 6, D.C.

Please send me a copy of your free booklet on new uses for Straits Tin.

Name_____

Firm Name_____

Street_____

City_____ Zone_____ State_____

SALES
REPRESENTATION
IN BRITAIN

The time may soon come when you will require first-class representatives in Great Britain, who can take full advantage of an easing Dollar situation to introduce your Chemical and Pharmaceutical products. Such an organisation must be both long established (our Parent Company was founded in 1797) and progressive, combining intimate knowledge of the market with imagination and drive. This is why we suggest you contact us.

G I
a Harris & Dixon company
GUEST INDUSTRIALS LTD
Raw Materials Division
81 Gracechurch St., London, E.C.3.

Will a Custom Grade of
penn-drake® white oil
Improve Your Product?

White Oils with unusual viscosities, pour points and other properties are a Penn-Drake specialty. *Write us about your problem.*

penn drake
PENNSYLVANIA REFINING COMPANY
Butler, Pennsylvania
702 Butler Savings & Trust Bldg. • Butler, Pa.
Branches: Cleveland, Ohio and Edgewater, N.J.

SYNDET SALES still lead, but the pace is slower.

Rising—More Slowly

Today, Americans clean more with synthetic detergents than with soap. The steady upward trend of the syndets, noted in the past, continues, but now at a slightly slower pace. That's the synopsis of the nine months' sales figures just out from the Assn. of American Soap and Glycerine Producers.

For the first three quarters of this year, synthetic detergent pound sales are up 10%, and nonliquid soap sales are down 11% compared with the same period in 1953.

A year-by-year rundown of sales spotlights this fact: the synthetic detergents have been gaining ground faster than the nonliquid soaps have been losing it.

Sales of First Nine Months 1954
(billion lbs.)

	Syndets*	% Change	Solid Soaps**	% Change
1950	0.82	+15	1.82	— 7
1951	0.94	+15	1.57	—14
1952	1.13	+20	1.42	— 7
1953	1.43	+27	1.23	—13
1954	1.58	+10	1.09	—11

Dollar sales for comparable nine-month periods show that nonliquid soaps are holding their own despite the continued slip in pound consumption. By the end of this September some $241 million worth of soap was sold by the group of manufacturers that were canvassed by soap statisticians. That's at almost exactly the same level as last year's figure, but down some 10% from the '52 total.

The changing pattern in household soap sales is brought out by a continuing *Food Topics* survey. *FT*'s analysis shows that toilet soap has been taking an increasing percentage of the soap dollar sales: close to 47% last year, up from 40% in '52 and 35% in '51. On the other hand, the percentage of soap flakes, chips, and powders has tobogganed to 40% from '52's 46% and '51's 51%. Only the laundry bar soap percentage has been relatively unchanged—around 13-14% for the past three years.

Dollarwise, as in pounds, the rate of increase in synthetic sales has been even more impressive: sales leaped from $247.8 million for the first nine months of 1952 to $325.0 million last year, a jump of over 30%. By the end of the first three quarters of this year, the increase was close to 12%—up to $363 million.

The climb, slower though it is, underpins the soon-due uptilting in sodium tripolyphosphate production (*CW, Oct. 30, p. 90*). Output of the latter is expected to top a billion pounds this year—some 64 million over '53.

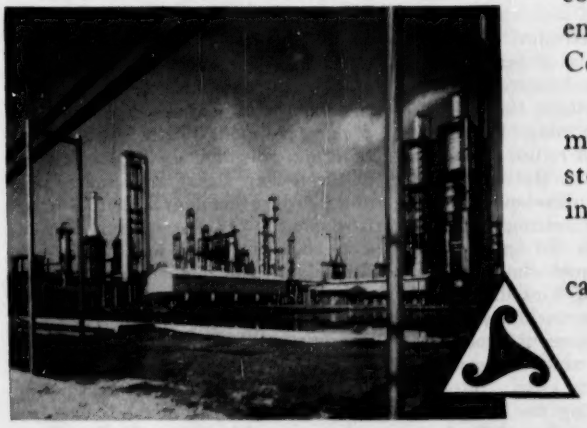
*Includes total pound sales of solid and liquid detergents reported by 34 to 39 companies in each nine-month period.

**Includes total pound sales reported for the first nine months by 92 to 66 companies.

CONOCO

New installations recently placed in operation at Lake Charles, include units for crude oil distillation, catalytic cracker feed preparation, Thermofor catalytic cracking, gas recovery, catalytic polymerization, catalytic reformer feed preparation and aromatics extraction.

GREATER CAPACITY– EFFICIENCY– ECONOMY FOR CONOCO



For Continental Oil Company, Stone & Webster Engineering Corporation designed and constructed seven types of process units and enlarged an existing alkylation unit at the Company's Lake Charles, Louisiana, refinery.

Continuous flow through several of the units minimizes the need for intermediate offsite storage facilities; and all units are closely integrated for high heat economy.

These new units more than tripled the capacity of the refinery.

Write or call us for detailed information as to how our engineering, design, construction, report and appraisal services may be of assistance to you.

STONE & WEBSTER ENGINEERING CORPORATION

BADGER PROCESS DIVISION

AFFILIATED WITH E. B. BADGER & SONS LIMITED (LONDON)

New York Boston Chicago Pittsburgh Houston San Francisco Los Angeles Toronto

PART CARBURIZING: Baskets of steel parts, hand dipped (left) or automatically conveyed through molten carburizing baths,

Liquid Carburizing Salts—A Treat for Steel

Ever since the 12th century, when swords of Damascus steel literally began carving a niche for themselves in Western history, surface treatments have been important techniques in iron and steel fabrication. With the development of metallurgical sciences, empirical procedures have been greatly refined and improved—perhaps one of the most important achievements in recent years has been carburizing (which, with proper tempering, gives "case hardening") in molten salts.

Little more than 20 years old, commercially, processes of liquid carburizing, with proprietary formulas of salts, are still undergoing changes.

Now, for example, one of the top three makers of these carburizing specialties is starting the heavy push for its latest products,* which feature a novel type of "activator" or catalyst.

It is in the area of catalysts that most of recent developments in liquid carburizing salts have been made—they boost the versatility of the baths, making them easier to use on a wider range of steel parts. But even aside from these newer developments, demand for the carburizing salts currently amounts to 5-7 million lbs. annually—this despite the fact that only an estimated 5% of the nation's steel output is carburized (in processes that use liquid, gaseous, and solid compounds, all of which are commercially important).

Big Three: Getting the lion's share of this more-than-a-million dollar business are three firms: American Cyanamid Co. (Metal Chemicals Section), E. F. Houghton & Co. (Philadelphia) and Park Chemical Co. (Detroit). There are other suppliers, too, but these three have probably done more research work on the compounds than any others.

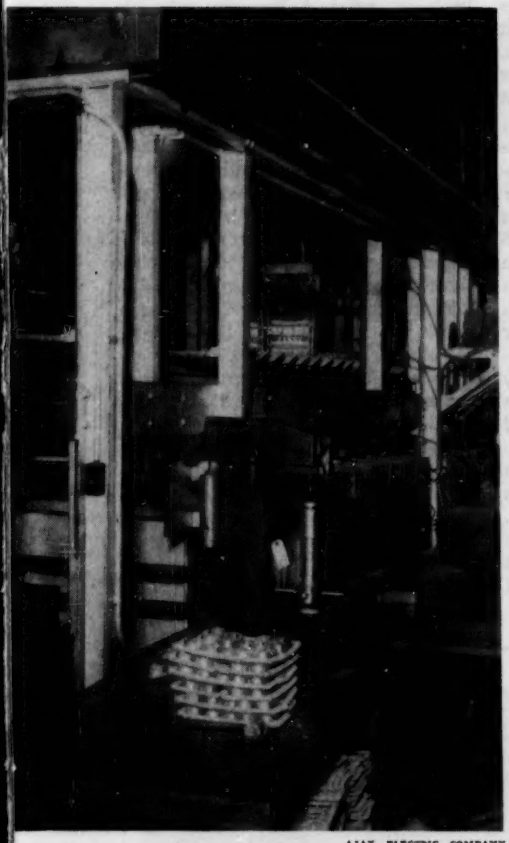
Basically, these makers of carburizing salts start with sodium cyanide. Making up about 65% of the formulation (and providing about 12% cyanide in the molten state), it is the source of the carbon that does the actual "case hardening."† At the bath heat, hot steel absorbs carbon, to a depth that depends on the temperature and the time of submersion.

(Such carbon absorption does not make the steel hard in itself; the next phases of treatment, quenching in water or oil or special salt baths, do the actual hardening of the surface.)

Activators, of a broad variety of composition, are next most vital ingredients of the bath. Molten cyanide itself (and it is used in almost the

* New products are American Cyanamid's Aerocarb R and S, which were officially introduced last month at the metals show in Chicago *(CW, Nov. 20, p. 116)*.

† The cyanide is converted into cyanate in the bath, and the cyanate into nitrogen and (through carbon monoxide) carbon, or so it is generally thought.



AJAX ELECTRIC COMPANY

get a surface hardening treatment.

same tonnages yearly as are the proprietary compounds for surface treatment) has been used to "nitride" steel (to a "light," 0.010-in. depth) in baths operated at about 1350 F. With addition of roughly 10% activator or catalyst, such as barium carbonates and chlorides, carbon penetration of the steel is greatly deepened, and the amount of nitriding is reduced, while the bath operates at a higher (1650 F) temperature.

Active Subs: Barium- (and calcium- and strontium-) based activators, although noteworthy because they put liquid carburizing on a basis to compete with solid (or pack) carburizing for the first time, leave some things to be desired. Most recent compounds have activators that give more flexibility—activators like fluorides, phosphates, or, in the case of Cyanamid's Aerocarb R and S, silicates.

These newer catalysts can match the barium compounds for speed of carbon penetration and offer such pluses as wide temperature working ranges, easy part cleaning (barium types are hard to wash from parts), little tendency to absorb moisture (a fault of the calcium products) and low corrosion hazard.

In addition to the cyanide and activators, the proprietary carburizing compounds contain sodium chloride and carbonate. To provide a floating "cover" for the molten salt so that oxidation will be reduced, about 2% of graphite is included in average formulations.

Many carburizing specialties are sold in granular form, but pressed briquettes and cast slugs of the salts have also been tried. Prices vary greatly, from about 4½¢/lb. to $1.25¢/lb., but average prices are 20-25¢/lb.

The compounds can be used in open tanks for hand-dipping of parts, or in enclosed, mechanized systems (*see cuts*). Gas-fired or electrically heated tanks (such as those made by Ajax Electric Co.) are commonly used—in the more complex, automatic units, cleaning baths, water quenches, and tempering baths are part of the setup.

Up a Notch: Liquid carburizing has become widespread in the past two-three years, but it still has to overcome plenty of competition from other case hardening methods. Most estimates now place liquid treating in the No. 2 spot on the basis of volume of work done. Gas carburization, also a comparatively new process, is ranked No. 1 now (it makes use of methane, or similar, gas in enclosed furnaces; is used on many automotive parts).

Pack carburization, where the component is packed in charcoal (90%) and an activator like barium carbonate and heated in a furnace, is most directly competitive with liquid carburization. It was long the only method of case hardening, but has lost a lot of ground in the past few years.

Among the advantages that have put liquid carburization ahead of packing: it's said to give greater uniformity of casing (but it can be varied more easily when desired); there is freedom from scaling (a pack problem) and from soot (a gas problem); parts can be selectively hardened by partial immersion, or where total immersion is necessary, parts can be copper-plated where the hardening is not wanted.

Stress Easier: Because parts "float" in the molten salt, little stress is said to be applied during the heating cycle. In some cases, parts can be brazed at the same time they're carburized —with a brass that will melt while the piece is submerged.

Despite the high cyanide content of the carburizing bath, there appears to be little hazard from cyanide fumes for those working with them. At the high temperatures of the bath, the cyanides are oxidized to carbonates. It is suggested, however, that operators wear safety goggles or masks and gloves at all times, and that the bath areas be effectively hooded.

This combination of advantages has put makers of liquid carburizers in a solid position in the metal-working field. New activators, and other formulation improvements can strengthen that position, bring new jobs for liquid carburizing, and a bigger profits pie to slice.

Salt with a Future

There's renewed interest in boliden salt, the Swedish-developed wood preservative. McCormick & Baxter Creosoting Co. (Portland, Ore.) is planning a strong selling program for the salts, sees a big future for them.

Here are the advantages the firm lists for wood treated with the salt (which is a chromated zinc arsenate):

- The wood is nearly colorless, showing only a pale-green tint.
- It can be handled, painted, glued and finished like untreated wood.
- When dried, it has no odor, no accumulation of toxic materials on the surface.
- The salt won't corrode nails, bolts or hardware.
- A normal salt solution has a moderate fire-retarding effect; higher retentions offer better protection.
- The preservative is well fixed within the wood fibers—it leaches less than other salts.
- At $30/1000 bd. ft., the boliden treatment compares favorably with the $30-42/1000 bd. ft. cost of oil treatment.

McCormick & Baxter says there isn't any doubt that oil treatment of wood gives better protection for a longer period under adverse conditions. Nor does the company expect that its salt treatment will seriously invade the poles and piling markets.

Recent Realization: Still, it feels the potential market for boliden salt is substantial—for the reasons already listed, and because "it is only recently that homeowners, architects, and contractors have come to realize the benefits derived from using treated lumber in homes, schools and industrial buildings."

There are two methods of impregnating wood—the so-called empty-cell and full-cell processes. The latter

process is used by M&B in treating with boliden salt. For aboveground operations, where weather conditions are not severe, the amount of dry salt added to wood is roughly ½ lb./cu. ft. For underground applications or under severe weather conditions, about 1 lb./cu. ft. is used.

Foreign-Born: Boliden salt was developed as a water-borne wood preservative in Sweden in 1933. After its first commercial application in 1936, it pre-empted the wood preservative field there. Today Boliden Mining Co. (a Swedish concern) licenses the process and sells the salts throughout the world—it's the licensor to McCormick & Baxter.

But if boliden salt expects to do any pre-empting in this country, it has a long way to go. Last year, wood treated with creosote and oil-borne solutions totaled nearly 304 million cu. ft. The amount treated with salts was only slightly over 9 million cu. ft.

Two salts competing against boliden are Wolman salt (tanalith) and chemonite, which is an ammoniacal copper arsenate. Thus, it's apparent the Oregon company will have to push its product hard—its valuable qualities alone won't sell it.

Certification Plan

Part two of the plan to carry out provisions of the Miller Amendment (Public Law 518) were detailed recently in the Federal Register (Nov. 24, pp. 7585-86). The proposal, by the Agricultural Research Service of the U.S. Dept. of Agriculture, came only shortly after the Food & Drug Administration suggested residue maximums on about 40 established pesticides (*CW, Oct. 30, p. 96*).

It is the job of the Agriculture Dept. to certify to the Dept. of Health, Education & Welfare that any chemical on which tolerances are sought does have definite value. Briefly, the procedure's like this:

Anyone seeking certification of a pesticide requests it in writing from the Chief of the Plant Pest Control Branch, Agricultural Research Service,

Grease Bows Out

VINYL-BASE topcoats for exterior storage of machine tools will soon eclipse the old grease system at Ryan Aeronautical Co. (San Diego). Though the decision was made after a series of tests, the aircraft concern is still experimenting to determine which of several types of vinyl is best. Under consideration: commercial products of Los Angeles Chemical Co., and North American Aviation, plus one developed by Ryan. The workman above sprays a C-124 jig that has been placed in the Ryan inactive pool, located outdoors.

NOW OVER 5100
BIOS CHEMICALS

- Triphenylfulgide
- Triphosphopyridine Nucleotide (TPN)
- Trisilane
- 1,3,5-Tris (trichloromethyl) benzene
- Tritolylamine
- Tropine
- Tumenol
- Tyrosylglycylglycine
- Umbelliferone
- p-Urazine
- Urea Stibamine
- Urobilinogen
- Uvitonic Acid
- Veratric Acid
- Veratroyl Chloride
- N-Vinylphthalamide
- Xanthene (Dibenzopyrane)
- Xanthene-9-carboxylic Acid
- p-Xenylamine
- p-Xenyl Isocyanate
- Ytterbium Oxide
- Yttrium Nitrate

ASK FOR OUR NEW COMPLETE CATALOGUE

BIOS Laboratories Inc.
17 West 60th St. New York 23, N. Y.
Plaza 7-8171

CHLORINATED SOLVENTS

Ethylene Dichloride
Propylene Dichloride
Methylene Chloride
Carbon Tetrachloride
Perchlorethylene
Trichlorethylene

THE CP CHEMICAL SOLVENTS INCORPORATED
60 PARK PLACE · NEWARK 2 N J
WOrth 2-7763 MArket 2-3650

USDA. Any such chemical must also be registered as an economic poison, and the certification request must be accompanied by the petition for such registration.

(It is emphasized that any certification will cover only the "economic" poison applications of the chemical, and that in most cases, the actual registration will not be completed until the tolerances have been established.)

The effectiveness or worth of a pesticide can be expressed in a number of ways—as percentage reduction or control of pests, or perhaps as the increase in the yield or quality of a treated crop, to list a few ways.

Chance to Regroup: Should the department decide, on the basis of the data submitted, that the chemical is not proved useful, or if it is felt that it is useful only in some of the areas where certification is sought, it will notify the firm or person seeking the certification before any final action is taken (rejecting it, or approving it in limited fashion).

That will allow the interested party to request a rehearing on parts objected to, or perhaps withdraw the petition for later resubmission. To speed up acceptance of a chemical, it can be granted limited certification; and further hearings, to extend its certification, can be sought.

Also, in cases where the department feels that incomplete or unclear data has been submitted, the interested party will be notified so that more information can be rounded up.

Industry and individuals have 30 days (from Nov. 24) to file views on the proposals. Such arguments should be filed with the Chief, Plant Pest Control Branch, Agricultural Research Service, USDA, Washington 25, D.C.

Trip South

A new seed protectant coded WRL2 is being "selectively offered" for field trial by the U.S. Wildlife Research Laboratory at Denver. A chlorinated hydrocarbon with a high level of toxicity, it has already proved its effectiveness as a rodenticide in lab tests.

The object of the experiments is to check on its suitability as a protectant for tree and browse-plant seed. While most of the experimenting will take place in Southern states (among the cooperators are large pulp and paper manufacturers), a large-scale project will be launched in Wyoming by the Bureau of Land Management.

A seed protectant that has already proved its worth, tetramine, will serve as a control in the experiments. It is currently in short supply because the only producer—Farbenfabriken Bayer, A. G. (Leverkusen, Germany)—has discontinued its manufacture due to its high toxicity (*CW, Oct. 16, p. 72*).

Next spring the Wildlife Research Laboratory plans to sponsor WRL2 experiments for the protection of cereal grain seeds. One of these will be in Puerto Rico where agriculturists are asking for a seed armor that will repel both insects and rodents.*

•

New Source: Millmaster Chemical Corp. (New York) is now a source of molybdenum for agricultural use. Working samples of sodium molybdate are available on request.

•

Demineralizer: A pocket-size plastic container that converts tap water into mineral-free water for laboratory use is being made by Automatic Steam Products Inc. (New York). Name: Midget Aqua-Lab. Price: $1.69. Ion-exchange resin replacement packs sell for 85¢.

•

Dry Wash Cleaner: Burroughs Hand Cleaner, a dry wash, has been developed by Mittag & Volger, Inc. (Park Ridge, N.J.) owned by Burroughs Corp., makers of business machines. Designed for use by office personnel, it's said to remove stains from ink, grease and oil, as well as carbon paper and typewriter ribbon smudge. It comes in a 10-oz. aerosol container.

•

Aerosol Water Repellent: Fumol silicone water repellent, a 12-oz. aerosol selling for $1.98, is currently being marketed by Fumol Corp. (Long Island City, N.Y.) Claims: complete water repellency without discoloration, stiffness or waxy film.

•

Pincurl Type: Procter & Gamble plans to introduce a new pincurl permanent—for home permanent waving—this month. Dubbed Pin-It, the product will retail at $1.50.

•

'With Bleach': Hailed as the first cleanser that bleaches as it cleans, Bab-O With Bleach is now available to housewives. It's a product of B. T. Babbitt Inc. (New York).

•

Substitute: Barrett Division, Allied Chemical & Dye Corp., has brought out a new compounding product for use in making black rubber items. "BRC" 22 Hydrocarbon is suggested as a replacement for other hydrocarbons no longer available because of raw materials shortages. It is said to

*Also being tested this winter, with tetramine as a control, is B-1667, a substituted oxamide. The government biologists say it is not as well understood as WRL2.

PETROLATUMS
WHITE OILS
SULFONATES

REFINERIES AT
• GRETNA, LA.
• KARNS CITY, PA.

• WAREHOUSE STOCKS IN PRINCIPAL CITIES

SHERWOOD
REFINING COMPANY, Inc.
Englewood, New Jersey.

NOTICE

A new catalog of some 3500 Eastman Organic Chemicals has come out. If you have not already received your copy of *List No. 39*, you can get it by writing to Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y. (Division of Eastman Kodak Company).

tracers...to opportunities in the chemical process industries

MANAGEMENT SERVICES

ENGINEERING CORPORATION OF AMERICA

Chemical & Petro-Chem Process Plants
Industrial Waste Treatment Projects
Air Pollution Abatement
Special Mechanical & Process Equipment

205 Grove Street — Westfield, N. J.
Westfield 2-7117

EVANS

Chemical Research—Processes-Products
Development Problems
Complete Laboratory—Pilot Plant
Mechanical & Optical Sections

Ask for new Scope Sheet C
listing over 100 of our activities

EVANS RESEARCH & DEVELOPMENT CORP.
250 East 43rd St., N. Y. 17, N. Y.

J. D. JOFFE, LITERATURE CHEMIST

A CHEMICAL INFORMATION SERVICE

Technical, Scientific & Economic Reports
and Related Consulting Work.

50 E. 42nd St., New York, N. Y. — MU 2-1290

D. H. KILLEFFER

- TECHNICAL PUBLICITY
- TECHNICAL SALES LITERATURE
- ANNUAL REPORTS
- COMPANY HISTORIES
- BIOGRAPHIES
- TECHNICAL GHOST WRITING

Telephone: SPencer 9-6821
168 Westchester Avenue — Tuckahoe 7, N. Y.

THE C. W. NOFSINGER COMPANY

Personalized Engineering Service
PETROLEUM REFINING AND CHEMICAL INDUSTRIES

- Surveys—Planning—Process Design
- Engineering Design—Drafting—Procurement
- Supervision of Construction and Operation

906 Grand Avenue, Kansas City 6, Missouri

JAMES P. O'DONNELL

Engineers

CHEMICAL PROCESS PLANTS

Design—Procurement—Construction Supervision

39 Broadway, New York 6

SIRRINE

ENGINEERS

Plant Design & Surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment; Analysis & Reports

J. E. SIRRINE CO.
Greenville — South Carolina

Wisconsin Alumni Research Foundation

Project Research, Consultation, and Production Control Services in Biochemistry, Chemistry, Bacteriology, Entomology, and Pharmacology.

Write for price schedule

Wisconsin Alumni Research Foundation
P.O. Box 2059-G • Madison 1, Wisconsin

EMPLOYMENT

REPLIES (Box No.): Address to offices nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

Position Wanted

Chemist: Older man, long experience steels, metals alloys ores, lubricants. PW-4754, Chemical Week.

EMPLOYMENT

Positions Vacant

Wanted: Chemists or Chemical Engineers with BS Degree, plus minimum of three years' experience in technical service or selling industrial chemicals, for various positions open in our sales department. Apply Industrial Relations Department Hooker Electrochemical Company, Niagara Falls, New York.

Chemical Process Engineer: Experienced designer of fertilizer and agricultural chemical plants and processes. For large established engineering firm in this field. Send complete resume, past salaries. Southeast location. P-4791, Chemical Week.

WANTED

CHEMICAL ENGINEER

Strong materials engineering background in general or construction materials. Testing and evaluation. Salary open. Excellent oportunity. Nationally known firm, Metropolitan New York Area.

P 4777 Chemical Week
330 W. 42 St., New York 36, N.Y.

Engineer Wanted

NEW BUSINESS ENGINEER

Established engineering-construction management firm has opportunity for Engineer who has successful background in selling services for design of industrial chemical plants, public works, architectural. Write fully giving details of past similar selling.

P4617 Chemical Week
330 W. 42 St. New York 36, N.Y.

WANTED

POLYMERIZATION
RESEARCH DIRECTOR

Company now actively engaged in polymerization operations requires services of research director. We are enlarging our research group and production facilities and present challenging opportunity to an aggressive individual to grow rapidly in the organization. Experience in emulsion and solution polymerization preferred but will consider applicants with a general polymerization background. Salary level over $10,000 commensurate with capability, experience and education. Incentive plan and other benefits. New England location. Please reply to

P 4771 Chemical Week
330 W. 42 St., New York 36, N.Y.

Selling Opportunities Offered

Assistant for Sales Manager. Chemical training and sales experience essential. Plastics and plasticizer knowledge desirable. Please give qualifications and experience. Hardesty Chemical Div., W. C. Hardesty Co., Inc. 25 Main St., Belleville 9, N. J.

Manufacturer's Agent wanted for sales representation of industrial and pharmaceutical chemicals in West Coast, Midwest and New York City. RW-4794, Chemical Week.

Position Wanted

Available

P.A.

Industrial chemicals, dyestuffs, many related products; familiar sources and markets here and abroad. Age 32, married, one child. B.S. in Business Administration.
Gainfully employed but stymied. Now earning $12,500. Seeking spot where man can EARN (not make) A-1 income through A-1 performance.

PW 4784 Chemical Week
330 W. 42 St., New York 36, N. Y.

SPECIAL SERVICES

Truland Chemical & Engineering Co., Inc.

AVAILABLE CUSTOM REFINING FACILITIES
Distillation, Extractions
Separations, Fractionations

WANTED — All Types of Crude Mixtures
Drum Lots - Tank Cars
By-Products, Residues, Wastes
Contaminated Solvents

Box 426, Union, N.J. — Murdock 6-5252

EQUIPMENT--used-surplus

For Sale

Stainless Steel Type 347 Jacketed Vacuum Receiver, 2600 gal. cap. Perry Equip. Corp. 1415 N. 6th St., Phila. 22, Pa.

Evaporator, T316 St. St. 500 gal. cap. with 145 sq. ft. Hairpin coil. Perry Equip. Corp. 1415 N. 6th St., Phila. 22, Pa.

Lightnin Side Entering Stainless Steel Mixers—Unused—Sev-2500 (25HP) and Sev-750 (7½HP). Perry Equip. Corp. 1415 N. 6th St. Phila. 22, Pa.

Equipment Containers

CARBOYS

Used—ICC
CARBOYS
All Sizes
BOUGHT—SOLD—RECONDITIONED
GENERAL CONTAINER CO.,
441 Raymond Blvd.,
Newark 5, N. J. — Mitchell 2-5632

Wanted

WANTED

MACHINERY OR PLANT INCLUDING

Vacuum Dryers	Columns
Filter Presses	Pulverizers
Heavy Duty Mixers	Packaging and Wrapping Equipment
Rotary Filters	8/8 and non-corrosive
Reaction Kettles	Storage Tankage

P. O. Box 1351, Church St. Sta. N. Y. 8, N. Y

CHEMICALS WANTED

BUYERS OF SURPLUS

CHEMICALS—OILS—SOLVENTS
DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street — New York 13, N. Y.
WORTH 4-5120

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

DEALERS in used-surplus

Buy With Confidence

Send us your inquiries for your requirements in Used Chemical and Process Machinery.

—"our 37th year"—

Consolidated Products Co., Inc.
164 Observer Highway, Hoboken, N. J.
Hoboken 3-4425 — N. Y. Tel. Ba 7-0800

WORLD'S LARGEST INVENTORY

MOTORS—GENERATORS—TRANSFORMERS
New and Guaranteed Rebuilt
1 H.P. to 2500 H.P.
FREE CATALOG

ELECTRIC EQUIPMENT CO.
P. O. Box 51 — Rochester 1, N. Y.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

impart exceptional tear resistance, particularly at high temperatures.

•

Color Series: Aula Chemicals, Inc. (Elizabeth, N.J.) has developed a group of water-dilutable pigment colors for textiles, called the 3000 Series. The colors are said to possess a high degree of fastness, can be used with all types of textiles.

•

Tough Tarpaulin: Du Pont has come up with a new-type tarpaulin that it says is "far superior to the treated duck commonly used." The product, Fairprene, is fabricated from two materials, nylon and neoprene. Du Pont claims that, in comparison with standard No. 8 duck tarpaulin, Fairprene is nonshrinkable; is at least three times longer-lived; remains pliable under temperature extremes; does not mildew or rot when stored; has at least four to six times the tear strength; is completely waterproof; is one-half the weight.

•

Northwest Addition: Rayonier, Inc. has begun production at its Hoquiam, Wash., plant of a new product to be used in oil well drilling. Called Rayflo, it's an additive for the "mud" employed in casings to increase efficiency of the drilling apparatus. The product is made from hemlock tree bark.

•

Tenfold Resistance: A wrinkle-finish coating based on Bakelite vinyl resins

Toys Take to Laundering

STUFFED ANIMALS that are machine-washable—that's the latest thing in the toy world. With each animal, which is made of noncrushable rayon plush, goes a package of Monsanto's detergent, All. The manufacturer (Ideal Toy Corp., New York) reports the toys can be laundered and completely dried in 40 minutes. Other claims: no seam-tearing, no lump-developing after washing. The toys are sold as five animals—three teddy bears, a dog, a cat. Price: $2.98.

Danitra
NITRATES
Looking for QUALITY SODIUM NITRATE?
Danitra double refined USP Grade contains not more than
0.05% CHLORIDES
0.05% SULPHATES
0.10% MOISTURE
Write us for samples and prices
Davies Nitrate Co.
INCORPORATED
115 LIBERTY STREET NEW YORK 6, N.Y.

PRODUCT EVALUATION
Performance Tests are vital to determine competitive standing and user requirements.
to indicate our scope of service for you—send for new booklet—
"PRODUCT EVALUATION PHYSICAL TESTING"
inquiries without Cost or Obligation
RESEARCH LABORATORIES
FOSTER D. SNELL INC.
29 WEST 15th ST. NEW YORK 11, N.Y. — WA 4-8800
CHEMISTS · ENGINEERS

CHEMICAL WEEK • ADVERTISERS INDEX

DECEMBER 11, 1954

ALUMINUM CO. OF AMERICA 57
Agency—Ketchum, MacLeod & Grove, Inc.

AMERICAN BITUMULS & ASPHALT CO...B80
Agency—Wank & O'Rourke, Adv.

AMERICAN CYANAMID CO., MANUFACTURES DEPT. 21
Agency—Hazard Adv. Co.

AMERICAN CYANAMID CO., REFINING CHEMICALS DEPT. 39
Agency—Hazard Adv. Co.

AMERICAN HARD RUBBER CO. 17
Agency—W. L. Towne Adv.

AMERICAN POTASH & CHEMICAL CORP. 23
Agency—The McCarty Co.

ANTARA CHEMICALS DIV., GENERAL ANILINE & FILM CORP. 43
Agency—J. Hayden Twiss Adv.

ARCHER-DANIELS-MIDLAND CO. 68
Agency—Bayless-Kerr Co.

AUTOMATIC SPRINKLER CORP. OF AMERICA 36
Agency—The Robert A. Joyce Co.

BADGER MANUFACTURING CO. 81
Agency—Sanger Funnell, Inc.

BAKER CASTOR OIL CO. 25
Agency—Samuel Croot Co., Inc.

BEMIS BRO. BAG CO. 74
Agency—Gardner Adv. Co.

BIOS LABORATORIES, INC. T96
Agency—Firestone Adv., Inc.

BROWN CO. 84
Agency—J. M. Mathes, Inc.

BUFFALO ELECTRO-CHEMICAL CO. 77
Agency—John Mather Lupton Co.

CARBIDE & CARBON CHEMICALS CO., A DIV. OF UNION CARBIDE & CARBON CORP. .....Back Cover, B66
Agency—J. M. Mathes, Inc.

CELANESE CORP. OF AMERICA..... 29
Agency—Ellington & Co.

CHEMICAL SOLVENTS, INC., THE C. P. B96

CHURCH & DWIGHT CO. T81
Agency—J. Walter Thompson Co.

COLUMBIA-SOUTHERN CHEMICAL CORP. 79
Agency—Ketchum, MacLeod & Grove, Inc.

COMMERCIAL SOLVENTS CORP. 83
Agency—Fuller & Smith & Ross, Inc.

CONSUMERS POWER CO. 2
Agency—Commonwealth Service, Inc.

DAVIES NITRATE CO. T99
Agency—Malcolm Severance Co.

DISTILLATION PRODUCTS INDUSTRIES, DIV. OF EASTMAN KODAK CO.....B97
Agency—Charles L. Rumrill & Co.

DRACCO CORP. 8
Agency—The Jayme Organization, Inc.

EASTMAN CHEMICALS PRODUCTS, INC. 18, 19
Agency—Kenyon & Eckhardt, Inc.

EIMCO CORP., THE 6
Agency—The Matsie Co.

FILTRATION ENGINEERS 30
Agency—W. L. Towne Adv.

GENERAL AMERICAN TRANSPORTATION CORP. 27
Agency—Weiss & Geller, Inc.

GENERAL MILLS, INC. 75
Agency—Knox Reeves Adv., Inc.

GIRDLER CO. 60
Agency—Griswold-Eshleman Co.

GOODYEAR TIRE & RUBBER CO., INC. .. 1
Agency—Kudner Agency, Inc.

GOSLIN-BIRMINGHAM MANUFACTURING CO. 60
Agency—Howard Allison & Co.

GREAT LAKES CARBON CO. 88
Agency—Davis, Parson & Strohmeier, Adv. Inc.

GUEST INDUSTRIALS—U.S.A. T92
Agency—Colman, Prentis, Varley, Inc.

HARSHAW CHEMICAL CO. 5

HERCULES POWDER CO. 11
Agency—Fuller & Smith & Ross, Inc.

HESS TERMINAL CORP. 32
Agency—Mahool Adv., Inc.

HILLS-McCANNA CO. 38
Agency—Russell T. Gray, Inc.

HOUSTON CO., DAVID T. T80
Agency—Town Adv. Assoc.

INLAND STEEL CONTAINER CORP. 12
Agency—Weiss & Geller, Inc.

KELLOGG CO., THE M. W. 63
Agency—Gordon Baird Assoc.

KOPPERS CO. 28
Agency—Batten, Barton, Durstine & Osborn, Inc.

KOVEN BROS., L. O. 84
Agency—Luserna Co.

KRAFT BAG CORP. 45
Agency—Arthur A. Judson, Inc.

MALAYAN TIN BUREAU B91
Agency—Gray & Rogers Adv.

MARINE TRANSPORT LINES, INC. 53

METAL HYDRIDES, INC. 54
Agency—Creamer-Trowbridge Co.

MICHEL & CO., M. T78

MICHIGAN CHEMICAL CORP. 7
Agency—Wesley Aves & Assoc.

NATIONAL PETRO-CHEMICAL CORP. ... 35
Agency—Sterling Adv. Agency

NIAGARA ALKALI CO. 41
Agency—Hazard Adv. Co.

NIAGARA BLOWER CO. 72
Agency—The Moss Chase Co.

NITROGEN DIV., ALLIED CHEMICAL & DYE CORP. 65
Agency—Atherton & Currier, Inc.

NORTHERN COOPERAGE CO. B81
Agency—K. T. Holmgren, Inc.

PENNSYLVANIA REFINING CO. B92
Agency—Walker & Downing Industrial Adv.

PETRO-CHEM DEVELOPMENT CO., INC.. 67
Agency—The Buchen Co.

POWER STAINLESS PRODUCTS CO. 3
Agency—Reidl & Freede, Inc.

PRESSED STEEL TANK T82
Agency—The Buchen Co.

REFINED PRODUCTS CORP. 44
Agency—James Civille Adv.

REICHHOLD CHEMICALS, INC.....Third Cover
Agency—MacManus, John & Adams, Inc.

REILLY TAR & CHEMICAL CORP. 31
Agency—J. Hayden Twiss Adv.

REPUBLIC STEEL CORP. 40
Agency—Meldrum & Fewsmith, Inc.

RHODIA, INC. 56
Agency—J. Hayden Twiss Adv.

ROHM & HAAS CO. 73
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.

SCHNECTADY VARNISH CO. 71
Agency—Peterson & Kempner, Inc.

SEABOARD SHIPPING CORP. T66
Agency—Colton Adv. Agency

SHELL CHEMICAL CORP. 57
Agency—J. Walter Thompson Co.

SHERWOOD REFINING CO. T97

SNELL INC., FOSTER D. B99
Agency—Ray Hawley Adv. Co.

SOLVENTS & CHEMICALS GROUP, THE.. 62
Agency—Russel M. Seeds Co.

SPENCER CHEMICAL CO. 61
Agency—Bruce B. Brewer & Co.

STALEY MANUFACTURING CO., A. E..... 46
Agency—Ruthrauff & Ryan, Inc.

STAUFFER CHEMICAL CO. 26
Agency—J. Hayden Twiss Co.

STONE & WEBSTER ENGINEERING CORP. 93
Agency—Harold Cabot Co., Inc.

TRUBEK LABORATORIES, INC. 37
Agency—Ray Ellis Adv.

UNION CARBIDE & CARBON CORP. CARBIDE & CARBON CHEMICALS Co. .....Back Cover, B66
Agency—J. M. Mathes, Inc.

VICTOR CHEMICAL WORKS 47
Agency—Russel M. Seeds Co.

WALLACE & TIERNAN, INC. 22
Agency—Branstater Assoc., Inc.

WESTVACO CHEMICAL DIV., FOOD MACHINERY & CHEMICAL CORP. Second Cover
Agency—James J. McMahon, Inc.

WINTHROP-STEARNS, INC. B82
Agency—Thompson-Koch, Inc.

WISCONSIN ALUMNI RESEARCH FOUNDATION B78
Agency—Arthur Towell, Inc.

WYANDOTTE CHEMICALS CORP. 49, 52
Agency—Brooke, Smith, French, & Dorrance, Inc.

tracers SECTION
(Classified Advertising)
H. E. Hilty, Mgr.

CHEMICALS: Offered/Wanted 98
EMPLOYMENT 98
EQUIPMENT: Used/Surplus New
For Sale 98
Wanted 98
MANAGEMENT SERVICES 98
SPECIAL SERVICES 98

ADVERTISING STAFF

ADVERTISING DIRECTOR B. E. Sawyer
ADVERTISING SALES MGR. R. S. Muller
BUSINESS MGR. A. J. Mangold
PROMOTION & RESEARCH MGR. F. E. Lesner
MARKET SERVICE MGR. A. Losick

Atlanta 3 .....William D. Lanier, 1321 Rhodes-Haverty Bldg., Walnut 5776-2389
Chicago 11 .....Alfred D. Becker, Jr., Steven J. Shaw, 520 N. Michigan Ave. Mohawk 4-5800
Cleveland 15 .....Vaughn K. Dissette, 1510 Hanna Bldg., Superior 7000
Dallas 1 .....James Cash, First National Bank Bldg., Prospect 7-5064
Los Angeles 17 .....Jos. H. Allen, 1111 Wilshire Blvd., Madison 6-4323
New York 36 .....Knox Armstrong H. L. Brown, L. Charles Todaro, 330 West 42 St., LOngacre 4-3000
Philadelphia 3 William B. Hannum, Jr., Charles F. Onasch, Architects Bldg., 17th & Sansom Sts., RIttenhouse 6-0670
San Francisco 4 .....John W. Otterson 68 Post St., Douglas 2-4600
Boston 16 .....350 Park Square Building Hubbard 2-7160
Detroit 26 .....856 Penobscot Bldg., Woodward 2-1793
Pittsburgh 22 .....738 Oliver Bldg., Atlantic 1-4707
St. Louis 8 .....3615 Olive St., Continental Bldg., Lucas 4867

SPECIALTIES . . . .

is offered by John L. Armitage & Co. (Newark, N.J.). Name: Armorhide. It has 10 times the abrasion resistance of conventional baked-on wrinkle finishes, according to Armitage. Uses: for interior panels of automobiles, business machine housings.

•

Bulletins: Among the latest are these:

• Alpha Corp. (Stamford, Conn.)—Bulletin 104, a 2-page circular that describes the company's new lubricant, Molykote Microsize.

• American Chemical Paint Co. (Ambler, Pa.)—a folder on Alodine 1000, a finish said to provide invisible protection for aluminum.

• Glyco Product, Inc. (Brooklyn)—Uses of Chelating and Sequestering Agents in Cosmetics, a discussion on chelating agents, their structure and properties.

Less Effort, Less Noise

HOUSEWIVES in Hartford, Conn., were recently introduced to a new type of garbage collection. It centers around paper bags treated with melamine resin to give them wet strength (*CW, Feb. 20, p. 48*). How the system works: the collector takes the filled bag out of the householder's garbage can, replaces it with a new one, then carries the packaged garbage to the collection truck. The trial run given the system last month employed bags developed by Union Paper & Bag Co. American Cyanamid Co. supplied the resin.

There's more to buying

RCI PHENOL

than meets the eye!

You get unseen benefits in specifying RCI PHENOL and other basic chemicals.

The very fact that Reichhold is one of the world's most rapidly growing chemical firms provides you with a very real advantage in doing business with us. We're proud of our position. To continue such development, we know we've got to give outstanding service. We've equipped ourselves to do just that . . . with a huge manufacturing set-up, well-stocked warehouses a short distance from any part of the U. S., and expert technical assistance available from our many plants and sales offices.

As for performance, RCI PHENOL couldn't be better. The outstanding reputation Reichhold enjoys as a quality producer spells satisfaction for you.

For specific details about RCI PHENOL (shipped in drums and tank cars), address Sales Manager, Chemical Division, Reichhold Chemicals, Inc., 630 Fifth Avenue, New York 20, N. Y.

If you make . . . Plastics • Plasticizers • Synthetic Resins • Insecticides • Disinfectants • Explosives • Dyes • Lubricating Oil Additives • Pharmaceuticals investigate RCI Phenol

REICHHOLD CHEMICALS, INC. | 525 NORTH BROADWAY, WHITE PLAINS, N. Y.

REICHHOLD

Creative Chemistry . . .
Your Partner
in Progress

Phenol starts its trip to a customer from a siding at RCI's Tuscaloosa plant where it is being loaded into a tank car.

Formaldehyde
Glycerine
Maleic Anhydride
Phthalic Anhydride
Phenol
Sodium Sulfate
Sodium Sulfite

Carbide's ETHANOLAMINES

FOR EXCELLENT *Emulsifiers*

MONOETHANOLAMINE and TRIETHANOLAMINE combined with fatty acids produce amine soaps that are important emulsifiers in the manufacture of "soluble" oils. When triethanolamine oleate is properly formulated in "soluble" mineral oils there is no separation of the soap and oil in either open or closed containers. Furthermore, relatively small proportions of these emulsifying agents are required to produce a good "soluble" oil.

Triethanolamine is a good emulsifying agent for cosmetic preparations. The detergent properties of this amine soap imparts a cleansing action to the cream, even when the soap is present in comparatively low concentrations.

Monoethanolamine and diethanolamine also enter into condensation reactions with fatty acids to yield an important class of textile assistants and synthetic detergents.

IN ADDITION—CARBIDE's monoethanolamine and diethanolamine are efficient agents for the removal of carbon dioxide and hydrogen sulfide from refinery, natural, and flue gas streams.

Your CARBIDE Technical Representative can discuss in detail additional technical information as well as purchasing and shipping data for these ethanolamines. Call him—he's as near as your phone.

In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

CARBIDE
AND CARBON
CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.